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A CLASS

File No. 2004/36

P&D. DEPARTMENT

BRANCH

Subject:—

Dr Ram Prasad's report on the utilisation of Jog power in the Southern area of Mysore Province.

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File No.

P.L. Secrt. Slip 24-B

SECOND NOTE

ON THE UTILISATION OF JOG POWER
- IN THE SOUTHERN AREA OF BOMBAY PROVINCE.-

With reference to the first note submitted to Government in this office letter No.Elg.62(1)/2376 dated 12th March 1947, regarding preliminary estimates and financial forecast for the supply of power from Jog to the towns and industrial centres of the Karnatak District (Belgaum,Dharwar and Kanara), it was considered desirable to review the question after personal contacts with leading business-men and industrialists in the above area, and accordingly, Dr.B.K.Ram Prasad was deputed for the purpose, (between 23rd April 1947 and 14th May 1947) who visited important Mills, Factories and Workshops in the prospective load centres and interviewed the Presidents of Municipalities, District and Local Boards and all leading businessmen and industrialists. His notes in this connection are embodied in Enclosure II.

2. As in the first note, all calculations regarding revenue are based on the rate of 0.25 per unit at E.H.T.Busbars at Jog communicated by Mysore Government to Bombay Government.The capital costs are upto 11 kV substations and do not include distribution costs. The prices for plant and work,except where specifically stated, are those prevalent in the middle of 1947.

3. In some of the paragraphs herebelow, a reference is made to the average self-supporting rates. It should naturally not be taken that all consumers will get electricity at these rates. Different classes of consumers will get different rates,some higher than the average,others lower than the average. In order to give an idea as to what rates will be applicable to different classes of consumers against a particular average rate, a table has been worked out to serve as an illustration. This table is appended hereto as an Enclosure I.

4. Preliminary examination of the problem before the preparation of the first note showed that a comprehensive system of transmission and distribution of Jog Power covering most of the load centres in the South of the Province would entail a capital cost of nearly 3½ crores of rupees. Owing to the paucity of immediately available loads, the recurring deficits were found t

to be enormous and it was further found that these deficits will continue for an indefinite period. This proposal was, therefore, not pursued. In order, however, to explore all possibilities of using the Jog Power, certain assumptions for load development which may be brought about by the industrial policy of Government were made and investigation was carried out for the use of Jog Power in three separate areas, viz. (1) Hubli-Gadag area, (2) Gokarn-Honavar area, and (3) Haveri-Ranibennur area. The note submitted to Government covered these three areas and it showed that even if the assumed loads were built up quickly, the recurring deficits for the Hubli-Gadag area for a ten year period would be very big and thereafter would continue for an indefinite period. To a lesser extent same was found to be the case for the other two areas. As a result of the further investigation of Superintending Engineer(Hydro), the position for these separate areas has altered for the worse for Haveri and Kanara and is much the same for the Hubli-Gadag area. Modifications in regard to load and costs found necessary are reflected in the tables I and II. A reference is also invited to Sketch I attached.

Table I.

Area	Load in kW Original Survey.			Load in kW. Revised Survey.		
	First year of service: kW.	Fifth year of service: kW.	Load in kW.Tenth year of service.	First year of service:	Fifth year of service.	Load in kW.Tenth year of service.
1	2	3	4	5	6	7
1 HUBLI:						
(a) including Belgaum, Gadag and Dharwar.	4,000	7,000		3,350	8,000	
(b) The above & Dandeli group.			16,000 (Rly.load is included)			16,500 (Rly. load is included)
HAVERI: including Byadgi, Ranebennur & large scale irrigation	550	1,500	2,300	250	1,300	1,800
3. KANARA: including Honavar, Kumta, Gokarn & forest industries.	1,450	2,350	2,600	70	1,300	1,600

Note:- In the revised forecast, the possible installation of two spinning mills at Gadag, one at Byadgi and a few extra items of load in each of the main load centres have been taken into consideration. The Government of India have not yet granted licenses for these new textile mills although the parties are trying to secure them. Likewise, although the M & S.M Railway authorities made an enquiry for about 5000 kW of power required for traction purpose between Londa and Marmagoa and which has been included in the forecast, it is not known when they will take a decision in the matter. The proposals for the pulp and paper industry on account of which a load of 1200 kW has been included are also uncertain as the Forest Department have yet to confirm the quantity of Bamboo available for regular supply to the factories; and no company has yet been floated for the manufacture of pulp and paper.

Table II.

Area	Capital Cost in lakhs of rupees. Old	Revised.	Load kW. Old	Revised.	Self-supporting rate anna/unit Old	Revised.	Deficits in lakhs of R Original first note.	Revised.	Revised at self-supporting rates
1	2	3	4	5	6	7	8	9	10
1.HUBLI. I Stage- (a)including Belgaum,Gadag, Dharwar and Hirsagar(5 yrs. service).	136	153	7000	8000	0.87	0.85	*33	*36	25
II Stage- (b)the above & Dandeli group (10 Yrs.service)	233	236	16000	16500	0.75	0.72	₹91	₹81	48
2. HAVERI: including Byadgi,Ranibennur & large scale irrigation(10 Yrs. service).	34	35	2300	1800	1.00	1.25	£10	£16	11
3.KANARA: including Honavar, Kumta & Gokarn (10 Yrs.service).	48	51	2600	1600	0.75	1.47	∠ 9	∠27	17

* at 0.7 anna a unit)
£ at 0.55 anna a unit)
₹ at 1.0 anna a unit)
∠ at 0.75 anna a unit)

) For the first note, it was considered that loads can only be developed if rates of this ordor were adopted and the deficits shown in column 8 and 9 above are based on these average rates.

6. It will be noted from column 8 and 9 of Table II, that deficits on the basis of the rates which were then considered necessary for the development of the load referred to in the first note for the Hubli area are not substantially different from those indicated in the first note.They are,however,substantially higher for Haveri and Kanara areas.The self-supporting rates for the Hubli area are substantially the same as on the last occasion,whereas the self-supporting rates for Haveri and Kanara are substantially higher,because of the reduced loads.If it were possible to sell energy at the revised self-supporting rates,the deficits to be incurred in ten years in Hubli area would be of the order of Rs.48 lakhs; in Haveri area, of the order of Rs.11 lakhs; and in

the Kanara area, of the order of Rs.17 lakhs. During the Superintending Engineer(Hydro)'s visit he was told that industrialists would be prepared to pay these relatively high self-supporting rates. It is,however, doubtful if they will actually do so,when the supply comes to be made.

Further proposals.

6. It is reasonable to assume that Kalinadi will be sooner or later developed and it will service practically the whole of the South of the Province. Any transmission and distribution system that may be laid out in this area should,therefore,be such as can be utilised effectively for the distribution of Kalinadi Power when it becomes available. In order that Government may have a comprehensive view of the problem, studies have been made for a system of transmission and distribution for (1) Jog Power by itself, (2) Kalinadi Power by itself and (3) to start with Jog Power to be substituted by Kalinadi when developed. Probable transmission and distribution systems for each alternative are given in the Sketches II,III and IV attached. The approximate capital costs and average self-supporting rates of supply and deficits have been worked out for all these three schemes.This is done with the view that Government may have an idea of the total extra deficit which they will have to incur if Jog Power is made available to serve the loads which will later be taken over by Kalinadi.

Jog Power by itself- Sketch II. p 58

7. In the preparation of the estimates,as per layout in Sketch II, the following considerations have been kept in mind:-

(1) The 33 kV transmission line from Hubli to Belgaum is to be taken via Haliyal and Khanapur to facilitate picking up several items of loads en route. This route would facilitate tieing up of the Kalinadi power station with this sytem in due course and also provide the required power for large scale forest industries if and when they are developed.

(2) The main 110 kV trunk line to Hubli is to be tapped near Sirsi to transmit power to the Kanara and Haveri areas over 33 kV transmission lines,through territories possessing future prospects of picking up loads en route.

8. The estimate for the proposal Skotch II covers the following :-

(1) Single circuit 110 kV main line from Jog to Hubli with double circuit 33 kV branch lines to Gadag, Belgaum and Dandeli (Kalinadi area).

(2) 33 kV double circuit branch line from Sirsi outpost to Haveri via Hangal and 11 kV lines to Byadgi and Ranibennur.

(3) 33 kV double circuit branch lines to Mudigare and 11 kV lines to the coastal towns of Kanara.The ~~k~~ 110 kV line from Jog to Hubli would be of single circuit upto 5 years of service and double circuit thereafter,provided by then Kalinadi power station has not been put into commission. Necesbary distribution lines of 11 kV have been included for certain extra load centres that are considered probable near the main load centres.

9. The loads assumed,capital cost and average self-supporting rates and deficits are shown in the following table- Table III. p 12

Table III

Area	5 years of service.			10 years of service.		
	Capital cost in lakhs of Rs.& loads.	Self supporting rate anna/unit	Probable deficits in lakhs of Rs.	Capital cost in lakhs of Rs.	Self-supporting rates anna/unit.	Probable deficits in lakhs of Rs.
1	2	3	4	5	6	7
Hubli area(including Dandeli).	Rs.174 lakhs. (8700 kW).	0.86	29	Rs 245 lakhs. (16500 kW)	0.73	58*
Haveri area(including Hangal).	Rs 60 lakhs (1800kW)	1.63	12	Rs.60 lakhs (2300 kW)	1.38	15*
Kanara area(including Karwar)	Rs.50 lakhs. (1600 kW)	1.38	11	Rs.50 lakhs (2000 kW)	1.20	14*
				3.53		87

* Provided the scheme is carried out as a whole and the average self-supporting rates are realised, the scheme is expected to become self-supporting after 10 years of service with (58+15+14) i.e. Rs.87 lakhs written off for the whole area.

Kalinadi Power by itself-sketch III. p 60

10. The approximate capital costs, rates and deficits are noted below for the Kalinadi scheme as a separate proposal as per Sketch III. The estimates for Kalinadi scheme are very rough and approximate and subject to alteration after the data and report from the Associated Consulting Engineers are available. The estimates are based on prices prevalent at the end of 1945. These being readily available have been adopted. It is difficult to envisage what the prices will be when the orders for machinery and equipment for Kalinadi scheme are placed, say about 7 years from now. It may be stated that the price level of 1945 was about twice the pre-war level.

If Kalinadi were developed without Jog preceding it, 66 kV transmission system will meet the requirements and the cost is based on that voltage.

Kalinadi by itself- (without being preceded by Jog)- Sketch III- Table IV. p 14

Kalinadi by itself-(without being preceded by Jog)-
Sketch III- Table IV.

SCHEME:	Capital cost in lakhs of rupees.	Effective capacity of the station.	Load in 15 years from now i.e.after 5 years of working of Kalinadi.	self supporting rate anna/unit.	Accumulated deficits after 5 years of working.
1	2	3	4	5	6
KALI-NADI.	546	24,000kW	19,000*	0.74	Rs.81 lakhs.
	576	36,000kW	30,000*	0.51	

Notes: This cost includes some Rs.35 lakhs for (1) Civil Engineering Works which must essentially be undertaken at the commencement to enable the future extensions for developing the scheme to its maximum capacity of some 80,000 kW. and (2) generating plant which with comparatively small additional cost,will make available another 12,000 kW.

* It is assumed that Government industrial policy will be such as will make possible development of industries which will provide the above loads in say 15 years from now.

Jog Power and later Kalinadi Power-Sketch IV. p62

11. If it were decided to undertake the work to make available as soon as possible Jog Power and also to proceed with the development work Kalinadi,the position may be expected to be as detailed below.The construction of the transmission system in Sketch IV for transmission and distribution of Jog make take 4 to 5 years,and the Kalinadi may be scheduled to be in commission in about 10 years from now, i.e. Kalinadi may start to take over the load from Jog after Jog has been in service for 5 years.The transmission and distribution system put up for Jog will be utilised for Kalinadi and the two stations interconnected and/or the redundant lines removed for use elsewhere.The capital costs, loads and deficits for Jog-Kalinadi proposal as per Sketch IV are shown below :- p62

Table V.....

Table V.

SCHEME	Capital costs in lakhs of Rs.	5 years of service. load kW	Self-supporting rate anna/unit.	Deficits in lakhs of Rs.	10 years of service 5 of Jog & 5 of Kalinadi. Load kW.	Self supporting rate anna/unit.	Deficits in lakhs of Rs.
1	2	3	4	5	6	7	8
Jog.							
(1) 1stage	284ø	11,000	Overall average 1.0	83			
(2) Kalinadi	437@				19,000* (effective capacity 24,000 kW).	0.98	133 ∠
(3) Extra cost.	Rs. 39 lakhs (over item(2)				30,000* (effective capacity 36,000 kW).	0.60	

760

Notes:- @ Cost based on 110 kV line to fit in with Jog.

* It is assumed that Government industrial policy for developing industries in this area will be such that these loads will be available, say 15 years from now.

ø The estimated salvage value of redundant lines when Kalinadi becomes available, and if it is decided not to tie up with Jog is Rs.53 lakhs.

∠ Difference between revenue and expenditure-later includes depreciation + interest on capital cost +capital loss on redundant line after allowing for their salvage value.

12. In order to bringout the use of Jog Power in its most favourable light all the tables relating to the use of Jog Power have been worked out on the presumption that Mysore Government will be prepared to supply power to the extent of 19,000 kW diversified demand at the consuming and equalling about 24,000 KW maximum demand at the Jog H.T.busbars. Enquiries made, however, show that Mysore Government is likely to supply power only upto a maximum of 10,000 H.P. i.e. about 7,600 kW at Jog busbars. This amount of power is too small for distribution at long distance and in wide areas economically. If it were decided to use it, in the industrial area around Hubli and supply restricted to Hubli, Dharwar, Gadag, Dandeli, Halyal and Alnavar, the capital cost and the self-supporting rate will be about Rs.127 lakhs and 0.91 anna/unit respectively. The latter rate is, however, not likely to be real-

and there will be in consequence deficits appreciably in excess of those indicated in Tables II and III.

Jog Power can best be used economically only at relatively short distances of Jog in the absence of existing loads even this can only be done if some new industries are started in the locality.

13. It must be noted that while only a limited amount of power (upto about 10,000 H.P. or 7,500 kW) from Jog is likely to be available, resulting in relatively high average self-supporting rates,Kalinadi is expected to provide some 80,000 kW. As load is developed the cost of Kalinadi Power will progressively decrease, as for instance,when the load reaches 30,000 kW., the average self-supporting rate at 11 kV terminals of consumers is expected to be about 0.51 anna/unit.

14. Comparing Table IV for Kalinadi by itself and Table V for Jog plus Kalinadi, it will be noted that the extra capital cost plus additional accumulated deficit- both to be written off- which will have to be faced in order to advance supply of power in this area by about five years by making Jog Power available and developing Kalinadi- both as soon as possible-is estimated to be of the order of Rs.174 lakhs.This is made up of extra capital to be written off,i.e.284+437-53(salvage value)-546(Kalinadi by itself)=Rs.122 lakhs.Additional recurring deficits 133-81(Kalinadi by itself)=Rs.52 lakhs.The deficit can, however, be more correctly estimated after the report on Kalinadi is received from the Associated Consulting Engineers.

15. It is a matter for Government to consider whether it is desirable to write off about Rs.174 lakhs of rupees in order to make power available in this area about 5 years ahead of Kalinadi.

16. It may,however,be stated that the industries and licensees now existing have already planned extensions without taking into account the possibility of power supply from Jog.Some of these are:- The Electric Power Station and Spinning Mills at Hubli, the Spinning Mills at Gadag,the Electric Power Station at Belgaum.Likewise,the sponsors of some of the future

industries, e.g. Sugarcane cultivation and sugar manufacture, have under consideration installation of thermal plants, if Jog Power is not made available.

17. The report of the Associated Consulting Engineers(India) on the Kalinadi investigations is expected to be received at about the end of the year (1947) and that of the Industrial Officer proposed to be appointed by the Educational and ~~Industri~~ Industries Department for the investigation of the Kanara Industries may also be available by then. By then, definite information may also be available about lift irrigation possibilities in the area from the Director of Agricultural Engineering to whom information called for by him has been supplied. It would be best that the matter may be considered again when these repor are available.

Sd. B.K.R.Prasad,
21/8/47

Enclosure I.

The following table must be taken only as an approximate illustration of the rates which will apply to individual consumer if it is ~~x~~ proposed to realise the various average rates, mentione ..... See Table III.

Area.	Hubli area, average rate 0.86 anna a unit.	Haveri area, average rate 1.38 anna a unit.	Kanara area average rate 1.20 anna a unit.
1. Licensee (Large & small)	1.00* 1.15	1.50*	1.5*
2. Big mills & workshops.	0.9*	1.00*	0.9*
3. Water supply.	0.8*	1.25*	-
4. Large scale Irrigation.	0.9*	1.5*	-
5. Gins, Presses, small industries & miscellaneous.	2.25@	2.5@	~~2x@~~ 2.5@
6. Small lift irrigation.	2.25@	2.5@	2.5 @

* at 11 KV .
@ at 100 volts.

Notes of Inspection and Investigations on the possibilities of supplying power to the Karnatak Districts from the Jog Power Scheme of Dr.B.K.R.Prasad.

Commercial data and availability of raw materials:

Attempts were made to ascertain the cost of coal,fuel oil and firewood in the existing power stations and industrial plant and also the approximate corresponding cost of energy. The quantity of raw materials produced and consumed in the industries were ascertained wherever possible.With regard to future developments,the details and status of the organisations responsible for this were noted.

The Public Works Department, Revenue and Forest officers were contacted and all the available data regarding lift irrigation and power required for the utilisation of various commercial crops and of forest resources were obtained. As there was no geological officer available, no definite information could be obtained regarding power required in future for metallurgical and mining purposes.

Technical and Financial Data:

Actual figures regarding the amount of power required for each of the industries were obtained from the managers and engineers of the respective factories and workshops.Actual cost figures were checked up by reference to their official statements.

Facilities for transport,transmission line routes and Substations:

Wherever possible the railway and road communication for location of a substation and layout of transmission lines were checked by personal inspection. The condition of forests was seen and ascertained by enquiries from local people,the facilities of transport by rail and road and sea communication were ascertained.

General Report:

1. The following places were inspected:

Belgaum District:	Dharwar District.	Kanara Distt.
(1) Belgaum.	(1)Dharwar.	(1) Londa
(2) Khanapur.	(2)Hubli.	(2) Supa
(3) Rakaskop.	(3)Annigeri.	(3) Dandeli
	(4)Gadag.	(4) Kulgi
	(5)Hanagal.	(5) Yellapur.
	(6)Haveri.	(6)Sirsi
	(7)Byadgi.	(7)Karwar
	(8)Savanur.	(8)Ankola
	(9)Ranibennur.	(9)Gokaran.
Bijapur District.		(10)Sanekatta.
(1)Bagalkot.		(11)Gundbala.
(2) Bijapur.		(12)Mudijeri.
(3) Korti.		(13)Kumta.
		(14)Honavar.
		(15)Bhatkal.

2. Important persons interviewed.

Belgaum:

(1) Mr.Kulkarni,M.L.A.,and also The President and Chief Officer, Municipality.

(2) Mr.Trottman, Commissioner, Southern Circle.
(3) Mr.Sheik,Collector.
(4) " Little,Superintending Engineer,Southern Circle.
(5) " Choksy,Executive Engineer,Roads & Buildings.
(6) " Mane, " ,Postwar Reconstruction.

Dharwar:

(1) Presidents Municipality & District Local Board.
(2) Executive Engineer,Dharwar.
(3) Engineer, District Local Board.
(4) Manager, Dharwar Electric Supply Co.

Hubli:

(1) President,Municipality.
(2) Mr.Kembhavi of Deccan Fertilizer and Industries.
(3) Mr.Walvekar, " " and Advocate.
(4) Mr.V.R.Sirur of Ginning Co. and Karnatak Chamber of Commerce.
(5) Proprietor,Bharat Mills.
(6) " ,Ghodke Works.
(7) " ,Duddikar Works.
(8) Deputy Engineer,M.S.M.Ly. D.".S.Hubli section.

Karwar.

(1) Mr.R.M.Prabhu,M.L.A.,
(2) Mr.M.A.Pai --
(3) Presidents,Municipality and District Local Board.

Gokarn:

(1) Mr.Gopi, M.L.C.
(2) Mr.S.R.Nadkarni,Salt Works.
(3) Mr.Kikeri, Executive Engineer.

Sirsi:

(1) Mr.S.P.Pandit, President, Coop.Bank.
(2) Mr.Nilekini, Landlord.

As mentioned above, the leading industrialists,businessmen, citizens,officers of Public Works Department,Forests and Revenue Department,Railway Department,Presidents and Members of Municipalities and District Local Boards were interviewed and all the local information regarding natural resources,the capacity of the mills,factories and workshops,and future prospects were ascertained,verified and checked up with data obtained in previous surveys by inspection of the most important and representative mills, factories and workshops.

Meetings:

The information given in the press note regarding power supply to this area was explained to the people in detail and th various local problems were discussed.The municipalities of Hubli and Dharwar, the Karnatak Chamber of Commerce held

public

public meetings when I explained all the information connected with the proposals and asked them to be specific in their load calculations. The implications of the cost of long distance E.H.T transmission lines at the present high level of prices, the absence of large industrial load demands at a moderate distance from the source of power supply and the consequent high cost of transmission were explained to them. When the rates of 0.87 for Hubli area and 1.38 for Ranibennur, 1.2 for Kanara area were intimated to them, they were prepared to pay whatever optimum rates are feasible, especially as their fuel charges are very high. (Vide report in the Samyukta Karnatak, dated 4-5-47).

Firsthand information was obtained from the Superintending Engineer, Southern Circle and Executive Engineer, Dharwar, regarding lift irrigation prospects, from the Conservators of Forests regarding prospects of wood industries and pulp and paper manufacture. The Commissioner, Southern Circle and the Collectors of the Districts gave valuable general information and help.

In most of the towns the information collected, checked up with the data obtained in the previous load survey and a few extra items of load were noted wherever they were not included before. The total existing load works out to about 10% more than what was previously calculated, which is to be expected as several small industries have sprung up during the last two years.

The existing loads in this area may be divided into the following categories:-

1. Textiles: (a)Spinning Mills, (b)Cotton gins and presses, (c) Silk throwing plants and reeling machines.
2. Vegetable Oils: (a)Groundnuts, (b)Seasame (b)Kusbe (d)Castor (e) Linseed.
3. Potteries and Ceramics: (a)Brick (b)Tiles and Refactory and (c) Cement(Future).
4. Mechanical Industries: (a) Private and Railway Workshops automobile Foundries (b)Repairs.
5. Wood Industries: (a) Saw mills, (b)Plywood factory (c)Cabinet making and (d)Pulp and paper(future).
6. Rural Industries: (a)Rice mills (b)Flour Mills Hullers (c)Sugarcane crushers.
7. Fertilisers & Chemicals: (a) Bone crusher mills, (b)Salt works, (c)Caustic soda and (d)Chlorine(future).
8. Irrigation Pumps: (a)Well irrigation, (b)River & Canal water lift pumping.

The.....

The availability of cotton, natural silk,oil seeds,all kinds of timber including high grade teak,bamboo and various useful minerals such as iron ore, manganese ore, limestone,gold bearing quartz and bauxite is an important factor in the prospects of building up future industries in this area.

The railway workshops at Hubli are the biggest on the metre gauge section of the M.S.M.Railway and are likely to be expanded.

The saw mills of the forest department and the plywood works at Dandeli are very well organised and are expected to be expanded in the near future. The salt works at Sanekatta(near Gokarn) are organised by a Cooperative Society and produce about 2,70,000 maunds per year and its members are proposing to install a caustic soda and chlorine plant as an adjunct to a pulp factory near their works,if conditions are favourable and concessions are obtained for the use of bamboo.

The Forest Department are making efforts to give facilities for a pulp and paper plant and have suggested two or three places such as Gundbala,Dandeli,Bomanhalli etc.

The 'Grow More' food campaign is being vigorously pursued and proposals for lift irrigation from rivers and wells are being put up by the Irrigation Department,sugar cane plantations are being organised by three groups of companies and sugar factories are being planned in the following centres:-

(1) Rakaskop near Belgaum by Narendra Singh Singhi.
(2) Lakkikop near Hangal by the Karnatak Sugar and Collulose Alchohol Limited.
(3) Near Bagalkot by Mr.S.S.Sakri.

Two textile mills are being plannod by the following and are likely to be located near Gadag :-

(1) Rao Bahadur S.S.Yelamali,Gadag.
(2) Cotton Co-operative Soeiety,"

The Bombay Silk Filatures Limited, have taken up extensive work on silk worm rearing,mulberry plantations and have started a silk throwing and filature plant at Hodge about 10 miles from Belgaum.

The two existing spinning mills at Hubli and Gadag now running on steam power have arranged for extensions of their plan for which machinery have been ordered. They are owned by Bombay Firms and are well established.

There....

There are about 759 gins all over the Karnatak and are likely to be adequate for the present requirements.

The location of the industries and load centres is shown in the accompanying statement and sketch. In spite of the above resources and the plans of industrialists, the lack of fuel facilities at a moderate rate and good water supply is a serious handicap which can only be overcome by supply of power. The present cost of coal is about Rs.40/- per ton at Hubli and of fuel oil about Rs.125/- per ton.

The average cost of fuel and & minor operation charges work out to more than 1.2 anna per unit in big mills such as - Bharat Mills, and over 1 anna/unit in Railway Workshop.(This does not include overhead and supervision charges).

Kanara District is very backward and lacks all modern amenities such as Railway, Water supply, sanitation and electric supply even of Diesel Station type. Except for a few rice mills and small saw mills, there are no industries worth mentioning.

The little industrial progress in the Karnatak Districts is due to the strenuous effort of the organisers and the availability of trained workers and craftsmen. Coal, oil and firewood are being used to their best advantage in whatever quantities available.

Some statistical information regarding, cotton, oil seeds, are shown in the Appendix B. The fact that only about 30,000 bales of cotton are being used in the mills at Hubli and Gadag whereas nearly 1,50,000 bales are produced in the cotton area, shows that there is room for expansion, if facilities are available.

The existing and probable loads as per previous line route in the next 5 and 10 year periods are shown in the table No.1. The main items are noted in comparison with previous survey.

Table No.....

Table No.1

Estimated loads in different areas.

Area	original surveys kW.			Present Survey kW.			
	1st year of service	5th year of service.	10th year of service	Present load potential.	1st year of service.	5th year of service.	10th year of service.
Hubli including Dandeli.	4000	7200	11300	4100	3350	8000	12000 16500*
Kanara.	1450	2350	2600	200	70	1300	1600
Haveri.	550	1500	2300	500	250	1300	1800
Total Diversified.	5500	10000	14800	4400	3300	11000	14000 18000*

Note: All figures are in kWs. * Including Ry.load at Londa.

In Hubli area, the extra loads are due to the inclusion of a few items such as the existing municipal pumping station, small mills and newly proposed sugar factories.

In the Kanara area, the probable load of caustic soda and pulp plant has been reduced as the proposals of the Sanikatta people is for a Caustic Soda plant of only 5 tons day and pulp plant of 10 tons day. Even this has to be confirmed.But some extra load of refrigeration for fisheries has been included.

In the Hangal Haveri area, the load of a proposed sugar factory and the seasonal load of rice mills and small industries of Savanur have slightly added to the previous loads.But the irrigation load is only half of the original estimate.The Extra load of few new plants show some slight increase(of load.) Sirsi is a big business centre and Mr.S.P.Pandit and the Municipal councillors have written to state that about 500 kWs.are likely. But we have taken a conservative figure of about 200 kWs.only.

If the shipbuilding industry which is proposed by Mr.A.M. Bhatt is taken up either at Karwar or Bhatkal, and is likely to materialise, it will add possibly a load of about 500 kW in 5 years and go up to 1000 kW in 10 years. But this has not been taken into account.

The revised load figures on modified line routes are not in the accompanying statement for purposes of comparison. More details in appendix A.

Table No.2

Development of load as per modified routes

	Existing load.	Load if service is given in 1952.	Load after 1957.
Hubli,Dharwar,Gadag, Belgaum,Haliyal and Dandeli--	4,100	3,500	8,700*
Kanara area and Sirsi Karwar & Ankola.	200	120	1,600
Southern Dharwar District (Haveri etc.)	500	340	1,800

*This does not include the proposod load of 5000 kW for Railway Electrification between Londa and Marmagao.

As mentioned before, the public of the Karnatak Districts were told about the average working rates mentio ed in the press note.They seem to be quite willing to accept whatever rates Govern ment may fix to make the scheme economically feasible,so that they will get power definitely in the near future. They frequently expressed great difficulties they are undergoing for want of motive power and desired that their cases should be considered with sympathy by the Government to make power available. When questioned about the feasibility of paying higher rates for power, they expressed a desire that big loads with high load factors should be shown preferential rates,whereas the smaller loads would bear a slightly higher rates to make the average rate as per Government requirements. In these days in spite of severe competition from other places such as Bombay where power at a lower rate is availa ble, they mentioned that advantage over freight charges for raw materials such as cotton, oil seeds and other commodities would give them a fairly good margin to pay higher power rates.They also expressed.

expressed that when the loads increase and conditions improve, corresponding reduction in rates, if feasible, should be permitted.

The following Organisations were specifically examined about their present working rates:-

(1) Bharat Spinning Mills, Hubli.
(2) Railway workshops, "
(3) Spinning Mills at Gadag.
(4) Foundry machinery of Ghodke,Hubli.
(5) Municipal pumping set at Dharwar and Hubli.
(6) Licensees at Gadag,Dharwar and Belgaum.
(7) Industrial concerns of Narendra Singh Singhi at Rakaskop.
(8) Manekbag Oil Mills at Belgaum.
(9) Indian refractories, Belgaum.

Even the Conservator of Forests at Dandeli and the Managers of Plywood Factory stated that the average of one anna/unit will be within the possibility of acceptance. The names of the most important firms whose representatives were willing to give in writing the loads they would consume and the rates they would pay is noted below :-

(1) Bharat Spinning Mills,Hubli.
(2) Rao Bahadur Yelamali & his associations in Hubli and Gadag.
(3) V.K.Sirur and Bros.
(4) Foundry Works of Godke.
(5) Railway workshops,Hubli.
(6) Plywood Co.,Dandeli.
(7) Plywood Co.,Dharwar.
(8) Yelamili Gin & Press (Mr.Matti),Dharwar.
(9) Indian Refractories, Belgaum-Khanapur(Mr.Marathe).
(10) Irrigation & Sugar Works,Rakaskop, Narendera Singh Singhi.
(11) Karnataka Sugar and Cellulode Works,Bombay,(Hangal area).
(12) Bombay Silk Filatures,Mr.Lokur.
(13) Manekbag Oil Mills, Belgaum.
(14) Damodar Iron Works,
(15) Municipal & Railway Water Works,Dharwar-Hubli.
(16) Karnatak Industries,Byadgi.
(17) Mangavi Bros.,Haveri.
(18) Mr.Shettar,Byadgi.
(19) Mr.Banagar,Ranebennur.
(20) Mr.G.P.Gopi,M.L.G.,Gokarn.
(21) Mr.G.N.Prabhu,M.L.A.,Ankola.
(22) Mr.S.P.Pandit,Nilekini, Sirsi.
(23) Salt Society,Sanikatta. Mr.S.R.Nadkarni.

The Managers of the firms were well posted with their requirements and were conversant with modern methods of running their factories and were anxious to build up their business by utilising the resources of the country around.

Suggestions for consideration:

Although the possibility of putting up supply lines to the West coast of Kanara and to the border towns of Dharwar such as Haveri etc.,may not be ruled out in priority,it is worthwhile to consider the financial implications if a main trunk line is laid out between

Jog and Hubli via Sirsi and suitable provision for putting up a switching and step-down station somewhere between Sirsi and Hangal to facilitate transmission of power to the coastal towns of Kanara as well as to Sirsi, Hangal and group of towns Haveri to Ranibennur as well as lift irrigation from Tungabhadra and Vardha and the probable forest industries near Gokarn or Yellapur.

Slight modifications in the route of transmission line to Belgaum may be effected to take on the way the loads at Haliyal, Dandeli, Alnavar and Khanapur, Gadag line may be so designed to take in some of the extra loads observed within about 10 to 15 miles about Gadag.

Main extra loads now envisaged after our recent inspections are noted below:

	Probable Load in 1952
Sirsi and Benavasi	200 kW.
Hangal, Lakkikop & Savanur.	720 "
Dandeli, Alnavar & Haliyal	300 "
Khanapur and Desur	640 "
Bombay Silk filatures	100 "

The loads expected after 5 years are separately indicated in the statement.

Gadag Bagalkot Section: Since last month, a few applications for large loads have been received from Bagalkot for the following industries:-

(1)	Deccan Cement Co.	.. 1600 kW.
(2)	Bhooma Madi for Spinning Mills	.. 1000 "
(3)	S.S.Sakri for his industries at Bagalkot, Guledgud and Ilkal	400 "
(4)	Executive Engineer for lift irrigation near Almatti and Bagalkot.	1200 "
(5)	Application from Kopbal for textiles.	1500 "

First of all, it will have to be ascertained whether necessary priorities and permits have been secured to start these industries.

Inspection of Transmission line routes: I inspected and checked practically all the routes of transmission lines connected with the preliminary estimates. The Section from Jog to Sirsi, as reported before the Chief Engineer is in heavy forest area. The Section from Kumta for about 20 miles is a difficult route, but the forest road thereafter runs fairly straight and forest thins out considerably.

The.....

The Section from Sirsi upto and beyond Haliyal runs through thin forest and thereafter with scrace vegetation.Except for the very heavy forest section, the transmission lines can be taken in fairly straight line routes and in areas like Hubli, Belgaum,Dharwar,there is no jungle and line construction would be easy.

Although the people are enterprising and anxious to start industries in the Karnatak districts,and their financial position is good,if not of the same order as that of capitalists in Bombay,they are under a serious handicap for want of fuel and difficulties of obtaining permits. For the new industries such as pulp,paper and plywood,and for utilising mineral resources,special help from Government is asked for and everything depends on a thorough industrial and load survey coupled with geological inspection of mineral resources.

Summary: (1) Loads previously assumed were generally confirmed. But some extra loads of about 2% in 1st year and 10% in 5th year are likely to be available.The total existing load in Hubli and Dharwar area is about 4100 kW and in the Kanara area 200 kW and Haveri area 500 kW.

(2) As it will take about five years by the time service is given even if the scheme is approved now,there is likelihood of securing larger loads in these areas, e.g. about 8700 kW in Hubli Section,1500 kW in Kanara area towns and 1800 kW in Haveri area, at the end of 5 years of service.

(3) It is worthwhile considering supply of power to the Kanara coastal towns and Haveri border towns by a tap from the main trunk line from Jog to Hubli, if it is found more economical than individual supply lines,provided the line to Hubli is approved.

(4) The industrialists and businessmen of Karnatak districts although at present behind in the development of their resources,are active and enthusiastic in bringing up such industries that will help in the progress of their district.Finances are not lacking but a certain amount of help and support from Government seems to be essential as new industries involve large quantities of raw materials etc which are in the state forest or to be mined from Government lands.

Sd. B.K.R.Prasad

Statement of approximate loads at the different centres (Diversified max. demand in kW).

	Existing load kW.	Potential after 5 years of service kW.	Potential after 10 years service kW.
1. Belgaum area.	400	2000	3300
2. Dharwar "	350	700	900
3. Hubli "	2200	4100	4800
4. Gadag "	800	2000	2500
5. Dandeli "	300	800	1600
6. Coastal towns of Kanara & Sirsi.	170	1600	2000
7. Hanagal area.	200	650	-
8. Haveri area.	360	1300	1800

The details which make up the total of the Diversified loads of items 1,3,4,5,6,7 and 8 are noted in the accompanying sheet.

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Belgaum.	Existing.	Potential 5 years.	Potential 10 years.
Belgaum Town.	390	1100	1200
Desur.	---	50	100
Rakaskop.	---	750	1900
Khanapur	50	300	430
Total	440	2200	3630
Diversified i.e.÷1.1	400	2000	3000
3 Hubli Area.			
Hubli .	2200	3510	3880
Nirsagar.	-	1000	1400
Total.		4510	6280
Diversified. ÷ /./	2200	4100	4800
Gadag			
4.Gadagtown.	630	1940	2470
Annigeri.	90	90	90
Mulgund.	90	90	90
Lakshmeshwar.	70	80	100
Total.	880	2200	2750
Diversified.	800	2000	2500
5.Dandeli.			
Dandeli.	160	630	1460
Haliyal.	80	100	100
Alnavar.	90	150	200
Total	330	880	1760
Diversified.	300	800	1600
6.Coastal towns of Kasara and Sirsi.			
Karwar.	40	200	250
Ankola.	20	100	120
Gokarn.	20	60	100
Kumta.	40	80	120
Honawar.	10	80	120
Sirsi.	60	200	230
Mudigeri.	-	1000	1200
Total	190	1720	2160
Diversified . 1.1	170	1600 (Approx)	2000(Approx)
7. Hanagal Area.			
Hanagal.	40	60	70
Lakkikop	-	500	500
Savanur.	180	210	250
Total.	220	770	820

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	Existing	Potential 5 years.	Potential 10 years.
Diversified 1.1	200 /xxxx	700	750
8. Haveri Area.			
Haveri.	120	200	260
Byadgi	120	550	700
Ranibennur	150	450	550
Lift Irrigat. at Havanur area.	-	200	400
at Airani.	-	30	70
Total.	390	1450	1980
Diversified i.e. 1.1	360	1300	1800

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Appendix 'A'.

The loads in the various centres have been checked by personal inspection and are noted below for comparison.

	Approx.load 1st year of service.	Expected in 5 years after service is started.
(1)Hubli area:		
(a)Previous Note	4000 kW.	7000 kW.
(b)Present Survey.	4100 kW.	8700 kW.
(2) Haveri area:		
(a) Previous note.	550 kW.	1600 kW.
(b) Present survey (including Lakkikop & Hahagal).	340 kW.	1800 kW.
(3) Kanara area:		
(a) Previous note.	1450 kW.	2350 kW.
(b) Present survey. (including Karwar & Ankola.)	120 kW.	1600 kW.

In the previous estimate the existing loads were taken into account while calculating the revenues at the end of 1st year's service.But on enquiry from the various Industrialists and business-men the loads have been modified to possible definite requirements, since it will be nearly 5 years before service ~~x~~ from Jog Power will be available, and these loads are taken for purpose of present calculation.

The loads now expected in the 1st,5th and 10 years of service are noted again for reference.

	1st year service. kW.	5th year service kW.	10th year service. kW.
Hubli area. Hubli with Ry.load.	3500	8700	16500
Haveri area.	340	1800	2300
Kanara area.	120	1600	2000
Total	3960	12100	16500
Diversified.	3600	11000	17000

As these loads are based upon existing plants and those expected in certain areas close to the main centres, slight deviation are required in the transmission line routes, and the location of substations and the type of equipment to be installed, the capital costs are modified accordingly.

Note regarding resources of Southern part of Bombay Province with reference to facilities of x industries and a Port in Kanara District.

The four districts, Belgaum, Bijapur, Dharwar and Kanara are rich in resources such as cotton, oil seeds, minerals including iron ore, bauxite, limestone and manganese ore.

2. The biggest forests in the Bombay Province are in the Kanara and Belgaum districts with very valuable stock of good timber (first class teak) and large quantities of Bamboo suitable for ~~pulp~~ pulp and paper. Besides this, thereare soft woods eminently suited for plywood and match manufacture, Hydro electric resources in this area are such that in future if it develops, larger industries would be located in these districts.

3. If a port is established, the ship building and other auxiliary industries will spring up. On account of large quantities of cotton and silk that are likely to be available, textile mills will probably be established.

4. The following statement shows the approximate tonnage and also the approximate acreage of land under cultivation:

(i) Cotton:	nearly 150,000 bales per year.
(ii) Oil seeds of all kinds:	about 600,000 tons, from which oil to the extent of 200,000 tons could be made and cake to the extent of 370,000 tons.
(iii) Cereals:	75,000 tons.
Pulses:	90,000 tons

(iv) The large quantities of limestone available near Bagalkot would yield cement to the extent of 200000 tons, annually if properly developed.

(v) The extent of bamboo in the Kanara forests is expected to be more than 100,000 tons and at least 50,000 tons could be utilised for pulp and this can be shipped out of this territory.

(vi) Iron ore if developed in due course would yield at least 60,000 tons of iron and steel a year and aluminium to the extent of 5,000 tons/ 1,000 tons a year.

(vii) The total quantity of sugar cane grown in this area is expected to be 600,000 tons, out of which at a very conservative estimate, about 3,000 tons of sugar would be expected.

(viii) If the Rayon industry is established in the near future, the production of 5,000 tons a year may be expected and chemicals about 20,000 tons a year would be required for the processes.

5. The estimate of cultivated land for various purposes is very roughly noted below :-

i)	Rice:	about	400,000 acres.
ii)	Wheat:	"	650,000 acres.
iii)	Other crops such as barley,maize,Jwari, grams etc.	"	3,300,000 "
iv)	Other food grains.	"	750,000 "
v)	Oil seeds.	"	624,000 "
vi)	Sugarcane and other sugars.		117,000 "
vii)	Cotton:		1,235,000 "
viii)	Other fibres:	"	20,000 "
ix)	Tobacco:	"	20,000 "
x)	Reserve forest area:	"	2,900,000 "

6. There is a large import of coal,fuel oil and other requirements for the existing industries, The quantity of timber is not indicated in the estimate,but it will be one of the biggest items as Kanara forests are very thick and yield almost all the timber required in the Bombay Province and Neighbouring territory.

7. Total livestock in these Districts is of the order of 33,000 which presupposes a large quantity of hides that will be exported.

8. The greatest need in southern part of Bombay Province would be easy transportation upto the ports by constructing railways from junction points such as Hubli to the coastal area.

9. Several years ago one of the ports in Kanara District(Karwar) seems to have been reported as a suitable port and would have developed to a great extent if facilities were provided.Besides the traffic from the Province,any good port in Karwar will facilitate the export of raw materials from Hyderabad,Bellary District and other neighbouring territory and import of machinery, coal and cloth especially if the distance from the port towards west is considered as short if not shorter than the existing ports The accompanying statement gives some idea of import and export from Karwar even under the present conditions without facilities of railway and a big harbour.

Present imports and Exports into the territory near Karwar.

	Imports value. in Rs.	Export value in Rs.
(1) Bricks,Tiles and Building Materials.	114,600	18,000
(2) Cocoanus fruits and vegetables:Grainsetc.	32,000	88,000
(3) Agriculture,Hardware etc.	14,250	24,000
(4) Miscellaneous including apparel,ropes, coir,etc.	20,000	15,000
(5) Drugs medicines.	43,000	
(6) other textiles.	10,000	
(7) Cigarettes,tobacco etc.	46,000	26,000
(8) Teakwood and other woods		380,000

Tonnage of smaller imports and exports from Karwar.

	Import Tons.	Export Tons.
(1) Teakwood:		5,000
(2) Firewood.		6,200
(3) Sugar,salt,betal nuts, vegetables and grains etc.,	1,050	280
(4) Manure:		77
(5) Cocoanut and other oils	17,000 gallons.	1,100 gallons.
(6) Fish(dry & wet)	125	3,000
(7) Tobacco:		19
(8) Piecegoods.	1,63,000 yds.	6,000

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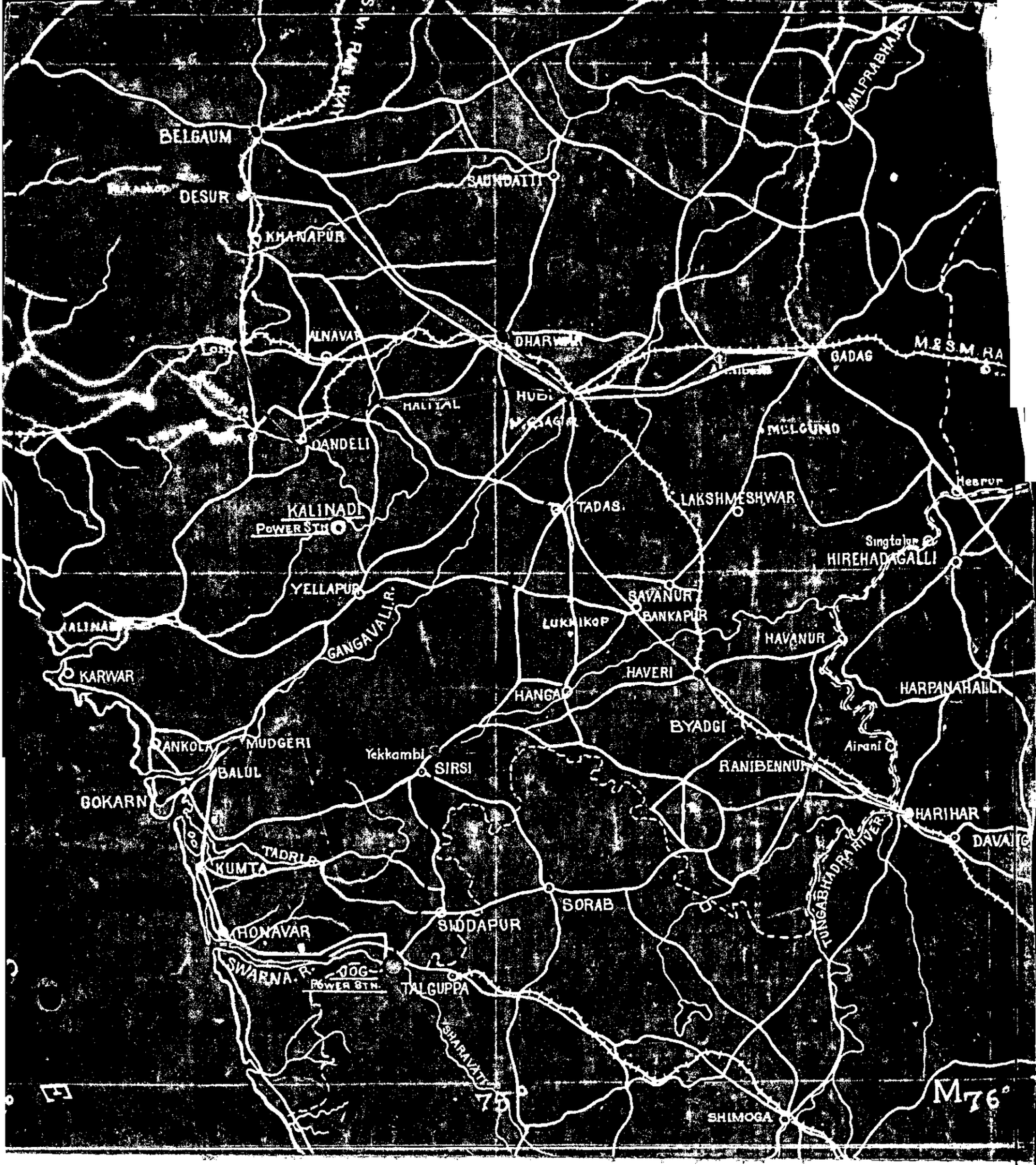


— SKETCH I. JOG SCHEME —

Power Station Existing

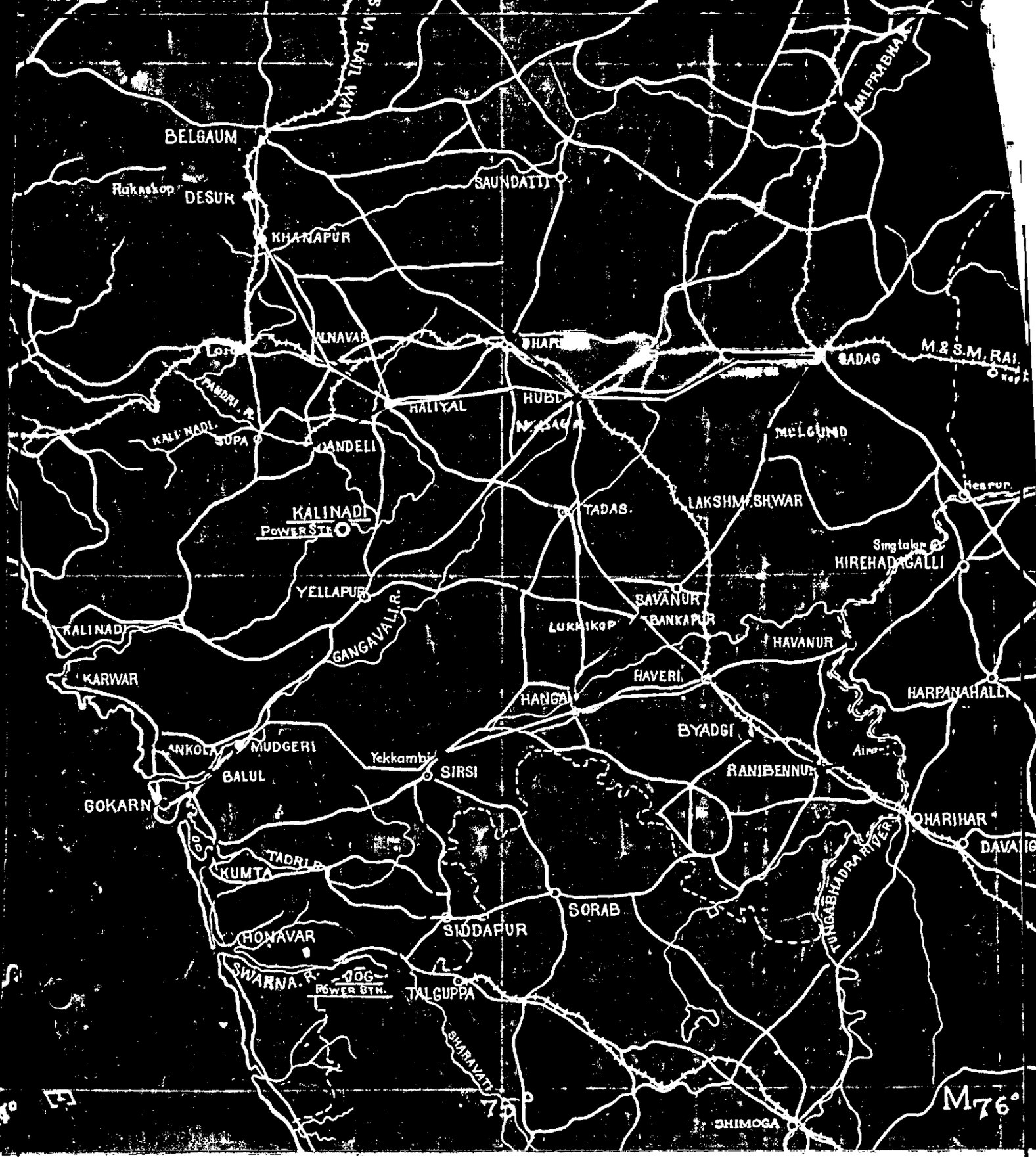
" " Future

110 KV Line

33 KV Line

11 KV Line

GOVT. OF BOMBAY. E.L. GRID DEPT.	
POWER SUPPLY TO KARNATAK AREA	
Traced By — R. Joseph.	Checked By Avl.
Date — 4-2-48	Scale — 1·014 Inches = 16 Miles.
— DRAWING No. MIS. 41. —	
R.P. Suptd. Engineer (Hydro)	



— SKETCH II. JOG SCHEME —

Power station Existing.

⊙ " " Future.

— 110 KV Line.

33 KV Line.

11 KV Line.

GOVT. OF BOMBAY EL. GRID DEPT.	
POWER SUPPLY TO KARNATAK AREA	
Traced By — R. Joseph.	Checked By —
Date — 4-2-48.	Scale — 1·014 Inches = 16 Miles
— DRAWING No. MIS. 41. —	
Supt. Engineer (Hydro)	

— SKETCH III. KALINADI SCHEME —

○ Power station Existing.

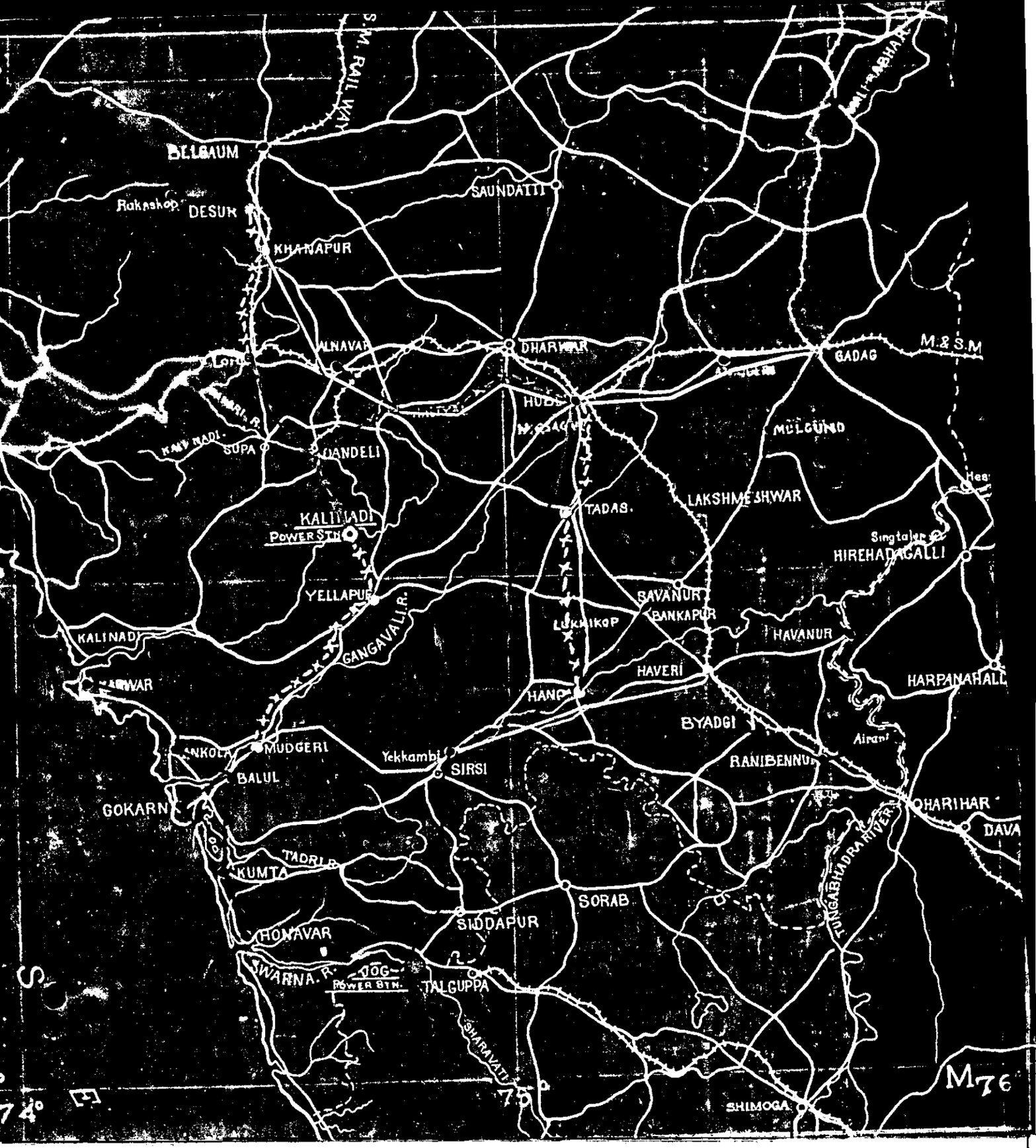
⊙ " " Future.

—|— 66 KV Line.

33 KV Line.

— 11 KV Line.

GOVT. OF BOMBAY. EL GRID DEPT.	
POWER SUPPLY TO KARNATAK AREA.	
Traced By— R. Joseph.	Checked By— A.I.
Date— 4-2-48.	Scale— 1·014 Inches = 16 Miles
— DRAWING No. MIS. 41. —	
R.L. Suptd. Engineer (Hydro).	



— SKETCH IV. JOG-KALI (comb) SCHEME —

- Power Station Existing.
- ⊙ " " Future.
- —— 110 KV Line OR 66 KV.
- —x— " " " (From Kalinadi)
- 33 KV Line.
- " " " (From Kalinadi).
- — 11 KV Line.

GOV.T.OF BOMBAY. ELCRID DEPT.	
POWER SUPPLY TO KARNATAKAREA	
Traced By — R. Joseph	Checked By —
Date — 4-2-48	Scale — 1·014 Inches = 16 Miles
— DRAWING No. MIS.41 —	
Suptd. Engineer (Hydro)	

Use of Jog Power.

I place below the second note on the Utilisation of Jog Power prepared by Dr.B.K.Ram Prasad in consultation with the Chief Engineer and myself.

2. Mysore Government had informed Bombay Government of their willingness to supply 5,000 H.P. at Jog H.T.Busbars at 0.25 anna/unit. Informal enquiries made by me show that Mysore Government is likely to supply upto a maximum of 10,000 H.P. only at the same rate, trend being towards reduction Formal negotiations can only be carried out satisfactorily after Government decision is available on the proposal of Jog Power and the extent of power required.

3. In order to view the Jog Power supply in the best light possible, the assumption has been made that Mysore Government will be prepared to supply power to Bombay Government to the extent of its full requirements during the next ten years. Under such circumstances, as will be seen from Table III of the note, the self-supporting rate in the first five and ten years service in the Hubli area will be about 0.86 anna/unit and 0.73 anna/unit respectively. The estimated deficit in the ten year period will be 58 lakhs of rupees. Actually, however, as Jog Power is likely to be restricted to the maximum of 10,000 H.P., the self-supporting rate for this amount of power distributed in the Hubli area is expected to be about of 0.91 anna/unit. The acceptable rate at which load can be developed is likely to be lower and consequently deficit will be larger. Although in Table III of the note, total deficit of about 87 lakhs of rupees is shown for all the three areas of Hubli, Haveri and Kanara, there will not be enough power to supply all the three areas.

If, on the other hand, power were to be supplied only to Haveri and Kanara, the figures which should be taken into account are shown in Table II of the note. The self-supporting rates will be 1.25 and 1.47 anna/unit respectively in the ten year period. The deficits will be Rs.11 and 17 lakhs in the ten year period respectively, provided the self-supporting rates can be realised. As, however, this is not likely to be the case, the actual deficits will be larger. It must be emphasised that the load forecast given in

in the Table includes possible new industries and irrigation loads.

4. In paras.6 onwards of the note, comprehensive proposals for networks of transmission and distribution lines for the whole of the South of the Province have been worked out and Jog Power supply has been compared with the possible Kalinadi supply.The networks have been so laid out that Kalinadi can utilise them after that project is developed. As mentioned previously,power from Jog will for all time be limited to the figure of 10,000 H.P.i.e. about 7,500 kW.Kalinadi on the other hand,it is expected, can be developed to roundabout 80,000 kW. The more it is developed, the lower will be the overall economic cost,as for instance,when 30,000 kW.load is available,the average economic rate at the 11 kV distribution terminals may be of the order of 0.61 anna/unit. The self-supporting rate at which Jog Power limited to 10,000 H.P.-can be supplied in the Hubli area is expected to be about 0.91 anna/unit.Later,when Kalinadi is developed and it takes over the loads previously supplied by Jog, the self-supporting rate when the load is 19,000 kW. is expected to be 0.88 anna/unit and when the load is built up to 30,000kW. the self-supporting rate is expected to be 0.6 anna/unit.On the other hand, if hydro power supply is postponed till Kalinadi is developed,the self-supporting rate with load of 19,000 kW.will be 0.74 anna/unit and with 30,000 kW. about 0.51 anna/unit.The rate will be more favourable when the load is developed beyond 30,000 kW.

5. Jog Power can be made available in about five years from now. On the other hand, it will take about 8 to 10 years to make Kalinadi Power available. If steps were taken to put up transmission and distribution lines as soon as practicable,Jog Power can be utilised in about five years from now.Later on,the load so built up can be taken over by Kalinadi when it is put into commission.By this arrangement, power supply in the South of the Province can be advanced by about five years.This will, however, entail an overall deficit of the order of Rs.174 lakhs which must be written off. The actual deficit may be larger than this amount and can only be ascertained more correctly when the report on Kalinadi is received

from the Associated Consulting Engineers (India).

6. It has been suggested in the last para. of the note that further consideration of these proposals may be taken up after the report of the Associated Consulting Engineers(India) on Kalinadi is available by about the end of the year.By then, it is also hoped that the report of the Special Industrial Officer for Kanara may be available.It is further hoped that the Irrigation Department's proposals for lift irrigation in the Haveri area may also have been received by then.

7. If Government were favourably disposed to the use of Jog Power in the South of the Province,the first action as a preliminary to the preparation of a detailed estimate would be to carry out a detailed survey of the transmission routes. In such a survey,only those routes would be dealt with which later can be utilised for Kalinadi.If Government wish this work to be done soon after the commencement of the next fair season ahead of their final decision on the proposals of Jog and Kalinadi,I shall,if so desired,submit my proposals.

Sd. P. B. Advani,
21-8-47.
Elec.Commr.

W/s 1-20

The 2nd note on the use of Jog power is placed below.A copy has been sent to H.M.,P.W.D.

Id.P.B.A(dvani),
21/8/47

Sec.to Govt.
P.W.D.

u.o.r. No.Elg.52(1½/8178
Bombay: 21-8-1947.
Encl.Files No.1411/27 I & II
& file No.2004/36I.

4 VPA
2 4/2/48

2004/36/35963
P.W.D.

El.Br.

In March 1947 the El.Commr.with the Govt.of Bombay submitted a note to Government regarding the utilisation of Jog Power in the Southern part of the Province.A press note was issued in April 1947 indicating the conclusions reached as a result of the survey made by the Electric Grid Deptt.and it was decided to take the following action :-

(a) As suggested by the El.Commr.an officer should be appointed to study the industrial possibilities of the area

and

(b) the El.Commr.with the Govt.of Bombay should carry on personal negotiations with the Government of Mysore with a view to secure the agreed power of 6000 H.P.from the Jog Falls at a reduced rate of 0.125 anna per unit and also to secure addl.power, if required.

Regarding (a):- The Education and Industries Deptt.was requested to take necessary action in this Deptt. memo.No.2004/36-El, dated the 19th April 1947. Since then that Deptt. is being reminded every month but no reply indicating how the question stands has so far been received from that Deptt.From the informal enquiries made in that Deptt. it is however understood that the question is still under consideration of that Department.

Regarding(b):- From the El.Commr's note discussed in the following xxxx para.it will be seen that the informal enquiries made by that officer show that the Mysore Govt.is likely to supply power from the Jog Falls upto a maximum of 10000 H.P. only at 0.25 anna per unit, trend being towards reduction.The El.Commr.has xxxxx noted that formal negotiations can only be carried out satisfactorily after Govt.decision is available on the proposal of Jog power and the extent of power required.

2. The H.M.,P.W.D. had desired that Dr.Ram Prasad of the El.Grid Deptt.should visit the south of the Province in connection with the existing loads and the possibility of supplying Jog power in that connection.The El.Commr.has now submitted a note on the utilisation of Jog power prepared by Dr.Ram Prasad in consultation with.....

with the C.E. and the El.Commr.with a covering note by the El. Commr.himself. The El.Commr. has submitted co ies of these notes direct to the H.E.,P.W.D.

3. The following are the m$_a$in points brought out in the notes:-

(i) The Mysore Govt. is likely to supply power only upto a maximum of 10,000 H.P.,i.e.,about 7,500 kW.at Jog bus bars.

(ii) The Jog power can best be used economically only at relatively short distances of Jog; in the absence of existing loads even this can only be done if some new industries are started in the locality.

(iii) Kalinadi can be developed to round about 80,000 kW.

(iv) Jog power can be made available in about 5 years from now,while it will take about 8 to 10 years to make Kalinadi power available.

(v) The load built up for Jog power can be taken over by Kalinadi ~~kn~~ when it is put into commission.

(vi) The supply of Jog power in the south of the Province in advance of that from the Kalinadi will however entail an overall deficit of the Rs.174 lakhs(approx.)which must be written off.

(vii) Further consideration of the question may be taken up after the report of the Associated Consulting Engineers(India) on Kalinadi is available by about the end of the year.

4. The point for consideration of Government is whether the power available from the Jog Falls should be utilised in the South of the Province in advance of that available from the Kalinadi Scheme and the El.Commissioner asked to submit his further proposals in the matter at this stage or consideration of the question may be held over till the report of the Associated Consulting Engineers regarding the Kalinadi Scheme is available-vide paras.6 and 7 of the El.Commr's. note.

Id.S.G.J.
27/8/47

I.Br.(II) Thro' I.B.(II).

5. Portion 'A' on p.153 ~~x~~ rel lift irrigation in Haveri area.

This is minor irrigation work and the A & R.D.Deptt.is concerned with minor irrigation schemes.If considered necessary that Deptt. may be requested u.o. to state the position.

Id.G.A.N.
28/8/47.

Schemes outlined.

Schemes outlined. Wb64-68

The El.Commr. has discussed three alternatives regarding planning of the Electrical Grid Scheme in the Southern part of the Province:

(i) Jog Power by itself.

(ii) Kalinadi Power by itself.

(iii) Jog Power followed by Kalinadi Power.

As we intend to develop the Kalinadi resources as soon as possible the utilisation of the Jog Power can be considered mainly under the scheme outlined in (iii) above.

Supply. The Mysore Govt. had informed us earlier to give only 6,000 H.P. at Jog but informal enquiries indicate that they will be prepared to give us up to 10,000 H.P.(7,500 kW) at their bus bars.They are not prepared to reduce the rate below 0.25 anna per unit.

When the Kalinadi Supply is fully developed an additional 80,000 kW. will be generated making a total of 87,500 kW.~~will be generated making a total of 87,500 kW.~~

Load Survey: A comprehensive load survey is carried out by contacting quite a larger number of industrialists and public workers.The anticipated demands are indicated in the table No.1 P 4. in the note (p.85 ante). A demand of 10,600/19,900 kW. is anticipated in the fifth/tenth year of the service on the assumption that the policy of the Govt.will be towards industrial development in the area, and certain industries which are in the prospecting stage at present do materialise.

Jog Scheme.

The self-supporting rates based on the revised survey are indicated in the table III P 12 based on the supply from the Jog source only(Sketch II) P 58 Wb10 12 in para. 9 (p.93 ante) and the anticipated deficit at the end of 10 years is worked out to Rs.87 lakhs. As even this,is based on a load far in excess of the supply which the Mysore Govt.is prepared to give and hence the actual deficit is anticipated to be much higher. Further,the self-supporting rates are also considered higher than what will ~~xxxx~~ attract customers and hence the deficit will be higher still.

For the development of Jog by itself,costing Rs.355 lakhs, therefore.....

therefore there is not enough supply; the transmission lines will be too long and the resultant costs unattractive even if Govt. is prepared to write off a large amount.

Jog Cum Kalinadi Scheme.

A probable layout of transmission lines is indicated in the sketch No.IV (p.147). Power will be available under this scheme in 4 to 5 years (from Jog) which later can be augmented when the Kalinadi Scheme comes into operation-after about 10 years. The initial costs, the self-supporting rates, and the deficits of the scheme are given in table No.V(p.97). It is based on an assumption that 11,000 kW. will be available from Jog. The cost of the Jog scheme will be Rs.284 lakhs self supporting rate will be 0.88 anna/unit and the deficit at the end of 10 years will be Rs.133 lakhs. As the supply likely to be received from Jog will be limited to 7,500 kW. and the rates will have to be a little ~~to 7,500 kW. and the rates will have to be a little~~ less than the self-supporting rates, the anticipated deficit will be higher still. A comparison of the Kalinadi Scheme by itself (table IV) and the Jog followed by Kalinadi (table V) is brought out in para. 14(p.99) and it is stated that the advancement of the supply by 5 years (by taking Jog first followed by Kalinadi) will cost Rs.174 lakhs which will have to be written off.

It is for consideration of Govt. whether the advancement of the supply by 5 years should justify the extra cost(to be written off) of Rs.174 lakhs which figure may probably be exceeded.

It has been suggested by Dr.Ramprasad that further consideration may be taken up after more information is available regarding Kalinadi Project, which is expected by the end of the year. By then something more about the anticipated industrial load will also be known.

The El.Commr. has suggested that if Govt. decide on this report, in favour of the use of the Jog power, detailed survey of the transmission lines will have to be carried out as a first step. The point is for orders.

Id.G.G.D(hanak), 2/9/47

The Deputy Secretary (Irrigation and Railways)'s note pages 159 to 162 summarises the proposals now submitted by the El. Commissioner-----

Commissioner with the note of Dr.Ram Prasad on the possibilities of utilizing the power supply available from the Jog Falls.

2. It seems pretty clear that in whatever way this power is used it must be a very costly business so far as this Government is concerned; necessitating a minimum write off of Rs.1½ Crores in 5 years, which figure may easily be exceeded.This means that Government will need to subsidise the use of this power, possibly only in a small area of the Province,to the extent of between Rs.35 to Rs.40 lakhs annually for 5 years.This certainly seems a very heavy subsidy for providing power 2 or 3 years before it could be given from the Kalinadi.

3. This loss to Government is likely to be still further enhanced if the rate proposed to be charged does not prove attractive as seems likely.

4. It is hardly possible to advise on this matter which is one which only Government can decide possibly for political reasons-- for any other considerations the proposal to utilize the Jog Falls Power would be ruled right out as hopelessly uneconomical.

H.Ms.may see and discuss.

Id.R.H.H(ammett),
3/9/47

Id.B.G.K(her),
12/9

Id.P.K.S.

Id.M.D.D.G(ilder),
6/9/47

(Pl. see H.P.M's minute on page 162).

H.M.,Ind.& B.C.D.,
H.M.,L.S.G.,
H.M.,For.& Agr.,
H.M.,Labour,
H.M.,Finance,
H.M.,L & C.S.D.,
H.M.,P.H.& P.W.D.,
H.M.,H & R.D.,
H.M.,Ex.& R.C.D.

~~xxxhmxfixxxxxxxxxxx~~ This file has been inadvertently delayed.The El.Commr. may be asked to expedite the full report on the Kalinadi project which was due at the end of Dec.1947.

Id.M.D.D.G(ilder),
30/1/48

Id.N.P.G(urjar),
30/1/48.

4VPA
4/2/48

2004/36/35963

P.W.Deptt.

El.Br.

Submitted.

2. These papers deal with the question of utilisation of Jog power. Please see in this connection the proceedings on pages ante. From the H.M's note,dated the 30-1-48, it is apparent that further consideration of this question is held over pending the full report of the Associated Consulting Engineers on the Kalinadi Project. As directed by the H.M. the El.Commr.may be requested u.o.to expedite the submission of the report in question with his remarks. He may also be requested t o submit his remarks on the sug estions in the note of the P.S.,Rev.Deptt.,dated the 3-2-48,as directed by the H.M.

3. Regarding para.1(a),dated the 27-8-47,it is noted for information that Govt.in the Education and Industries Deptt.have appointed in Nov.1947 and upto 31-7-48 Mr. T.K.Mirchandani,Conservator of Forests,as Special Officer to report on the industrial potentiality of the Districts of Dharwar, Belgaum, Kanwar and Bijapur vide G.R.,E.& I.D. No. 8001,dated the 11-11-47.

2
BKR
9-2-48.

9/2.
S.G.
9/2/48

9/2 N.P.G.

U.O. to the El. Commr

Y.P.W. Speech on the resolution of Mr. M.G. Gopi M.L.C. on 5th March 1948

Dr. M.D.D. Gilder.

Dr. M.D.D. Gilder (Minister for public works): Sir, when producing electricity from the Jog falls was first the Bombay Government made two conditions with the mooted by Government. One was that the Bombay Government should [illegible] 50,000 electric H.P., which means 3,750 KW of energy; and other was that in case visitors went to see the Gersoppa his power should be shut down for them to see. These were the conditions under which the Bombay Government as it existed agreed to allow the My[illegible] in the Gersoppa Falls. Ever[illegible] Government to produce electricity [illegible]city efforts have been made since this Government came into [illegible] the Mysore Government. In the[illegible]et more electrical energy [illegible]officially, we shall get 10,000 H.P. [illegible] so far as we know it [illegible]fort to get the price reduced has so fa[illegible]ergy; but every [illegible]thy charge is 0.25 of an anna per unit. How[illegible]ed. The price [illegible] still going on; they have been restarted al[illegible] negotiations [illegible]ministry in Mysore came into power; and we have a[illegible] they could supply to us 6,000 KW of energy at Harihal new [illegible]hat minimum duration they would like the Bombay Governm[illegible] if [illegible]nter into a contract with them. The first survey of the project for distribution of the electricity was undertaken in 1946-47 soon after this Govt. came into power, and a press note was issued in April 1947 based on that survey. Then we surved it again after the issue of the press note. Almost immediately we sent an officer who was known to the people in that district (Mr.Ram Prasad) -- this was done at the request of the representatives of the people in that district -- to survey what would be the possibilities of using the Jog power. He made a long report and gave some figures. He surveyed the project from all possible points of view: from the point of view of bringing the energy into Hubli, from the point of view of bringing it into Haveri and from the point of bringing it into Kanara District. These are his figures: If you want to take it to the Hubli area, it will cost you Rs.174 lakhs as capital expenditure (and mind you, these are last year's figures; they will be higher now); the rate will be fairly high; and in the next ten years you will drop another Rs.58 lakhs. If you take it to the Haveri area, the capital expenditure will be Rs.60 lakhs, the average price will be nearly 1½ annas; and you will drop Rs.15 lakhs in ten years. If you take it to the Kanara area, the capital expenditure will be Rs.50 lakhs; the average price will be about 1¼ or 1.1/3 annas; and another Rs.14 lakhs will be dropped in the ten years of working. Now that means a write-off of Rs.64 lakhs in ten years' working if you supply the power to Kanara. If you take all the three schemes together the cost will roughly be Rs.3½ crores and the loss Rs.87 lakhs in ten years. Then they went into a scheme whereby power may be taken from the Jog Falls now and substituted by power from the Kalinadi later on. The figures for this scheme were, capital expenditure Rs.760 lakhs and a deficit in the first ten years of Rs.133 lakhs. If we take the Kalinadi project itself -- I gave the Hon House the preliminary report of the Kalinadi project -- we can create more electricity than all the combined concerns th produce electricity from water in the province of Bombay today, and produce it at a very cheap price. Unforunately, we gave the preliminary survey to a company which depended on the Government of India's survey. The Survey Department of the Government of India promised them their report sometime in August last. So far that report has not been forthcoming. Our Government has been writing to the Survey Department of the Government of India But they are hard pressed and they have promised to give some part of the report month by month during this year. If they do it, we shall be able to report perhaps in May. It is not the fault of the Company. It has done its work. It is the Survey Department of the Government of India that has failed. When the Government of India gives us the report, we shall be able to say how soon the Kalinadi project can be undertaken.

But, in the meantime, in order to see what the potent
of the dis ict are, Government has appointed a Consel
of Forest icts, Dharwar, Belgaum, Karwar and Bijapur,
four di in particular the following matters.
coveri

(1) The state of existing industries and the scope
new industries in the region.

(2) Possibilities of large scale irrigation from the
Tadabhadi and other rivers.

(3) Possibilities of utilising to the maximum possib
extent the electric power which can be made available fr
the Jog Project.

(4) The facilities and concessions required and the
which shld be taken to establish the industries recomm
and to carry out lift irrigation from the rivers. The
Special Officers report is awaited. That will show us w
the possibilities of industrial development in that dist
area. The whole question of utilisation of Jog power eit
in Dharwar or in Kanara has been and is receiving the
attention of Government.

So far as regards the Kanara district itself in the
Sirsi-Siddhapur area it was reported that there was no scop
of development of any large scale industries. In the Honav
Kumta and Gokarn area there is some chance for a limited
industrial development. The difficult nature of the country
will, however, necessitate long circuitous routes of
transmission lines. The load development at first assumed
1,450 kw in the first year. But on the second survey it wa
found that it would be only 70 kw. in the first year, ri
to 1,00 in the tenth year of service. The probable load
of caustic soda and pulp plant has been reduced in the sec
estimate as the proposal of Sanikatta people is for a caus
soda plant of only 5 tons a day and paper pulp of 10 tons a
the themselves have reduced their estimate. The self-
supporting rate per unit will be 1.47 anna and the deficit
in the ten year period will be 17 lakhs, provided the self-
supporting rate is realised. If that is not realised, the
loss will be still greater and the capital cost will be 51
lakhs.

So, Sir, Government has given its attention to the
details of this scheme. They have tried to work it out
three times. Another officer is still working it out
order to find if anything has been left out. But at the
present moment, in order to give electricity to Kanara and
Dharwar, and thus to meet the wishes of my hon. Friends
M.Desai and Mr.Gopi, Government will have to incur a capi
cost of Rs.51 lakhs, and a loss of Rs. 17 lakhs in the ten
years' period. That is our calculation. Under these
circumstances, I hope the hon. Members will see that
Government has done all that it possibly could do. In
addition, members from several commercial associations ha
asked us, if we would give them permission to work the
scheme. I have asked them to apply in the usual way for
license. I have even assured them that Government wants
to make no profit from the Jog Falls energy. Government will
give power to them at the same rate at which it will get,
provided they can utilise it for either Dharwar or Kanar
So far as profit is concerned. Government's mind is open

and....

and I am told that two Associations are considering the questio

Mr.Narsingrao S.Desai: An Association of Byadgi is considering it.

Dr.M.D.D.Gilder: Yes, and the Karnatak Chamber of Commerce is also considering it. We have written to them that they can put up their scheme, and that if they can make it a success Government will have no objection, and Government does not want to make a pie of revenue from it.

Mr.Narsingrao N.Desai: If they undertake the scheme, they will not give us the benefit. They will take electricity to their place.

Dr.M.D.D.Gilder: As far as I can see, because of the undeveloped condition of Kanara, we have not got the possibility of taking it anywhere, unless the legislature is willing to incur a loss of three-fourth of a crore of rupees. If it is willing to do it, it can very well vote it and Govt. will then undertake it. But Government cannot recommend the spending of three-quarters of a crore of rupees for giving electricity to Kanara. If the area develops industrially, it is bound to take more electricity. But at the present moment there is no industry there. Government would like to promote industries also, but because of three quarters of a crore of rupees' loss of the tax-payers money, Government cannot proceed with merely putting up poles and wires. Government has examined and re-examined the project three or four times already, and there is another officer who is there again re-examining the situation. If it is possible to do it at a less cost, Government will be only too pleased to do it, or if anyone else can do it at a less cost, Government does not want to make any profit out of it.

Mr.N.G.Gopi: In the Press Note issued by Government, it was clearly stated that Honaver, Kumta and Gokarn area appears to be suitable for a limited industrial development and energy can be supplied at .75 of an anna per unit, and the scheme can be self-supporting.

Dr. M.D.D.Gilder: Perhaps after ten years. In the meantime?

(Laughter).

Mr. M. G. Gopi: Government should not grudge to spend money for my district. During the war time they have earned a lot. They have made huge profits from the forest produce of the Kanara district. In matters like these, Government should not mind spending irrespective of whether the scheme would be immediately paying, or would be paying only after ten years. I have no doubts that there will be large profits after ten years. My point is that all the difficulties pointed out by the Hon. Minister will always be there. In the case of the Kalinadi project the transmission line charges will be heavier than in the case of Jog because Kalinadi is not in the middle of the district The Hon. Minister has evaded to reply to this point of mine. Even after fifteen years, the difficulties which are now put forward will be there, because the conditions of the district will be the same. I am constrained to say that Government is trying to evade our demand by putting forth these difficulties.

Another point is that the Karnatak Estate Managers, Limited applied to Government on the 28th March 1947. That correspondence is yet pending with Government. If Government had given permission to them, they would have brought electric long ago. At least, they may now be encouraged by giving the licenses.

Mr. M.D.D.Gilder: Sir, I have said that that is the policy of Government.

Well, the hon. Member has charged me by saying that I evaded the point. I have not at all evaded the point. I have shown the condition in which the district is. When the Kalinadi project is ready, we hope to be able to produce electricity much cheaper. We have been trying to ask the Mysore Government to reduce their charges, but so far we have not been successful. We are still persevering in the effort and if my hon. Friend can persuade this House to write off Rs.51 plus 17 lakhs in ten years for supplying electricity to his district, I personally shall have no objection. Then as far as his criticism that private people have not been encouraged is concerned, we have already written to several people that they can apply for a licence in the usual form. They will be considered as licensees and that Government does not want to make any profit in this undertaking.

Mr.M.G.Gopi: I shall not press my Resolution. I shall wait and see what Government will do for my poor district. I know what the fate of my Resolution will be if I press it. So I had better withdraw it.

Resolution, by leave, withdrawn.

SECOND NOTE

ON THE UTILISATION OF JOG POWER
- IN THE SOUTHERN AREA OF BOMBAY PROVINCE.-

With reference to the first note submitted to Government in this office letter No.Elg.52(1)/2376 dated 12th March 1947, regarding preliminary estimates and financial forecast for the supply of power from Jog to the towns and industrial centres of the Karnatak District (Belgaum,Dharwar and Kanara), it was considered desirable to review the question after personal contacts with leading business-men and industrialists in the above area, and accordingly, Dr.B.K.Ram Prasad was deputed for the purpose, (between 23rd April 1947 and 14th May 1947) who visited important Mills, Factories and Workshops in the prospective load centres and interviewed the Presidents of Municipalities, District and Local Boards and all leading businessmen and industrialists. His notes in this connection are embodied in Enclosure II.

2. As in the first note, all calculations regarding revenue are based on the rate of 0.25 per unit at E.H.T.Busbars at Jog ~~xxxxx~~ communicated by Mysore Government to Bombay Government.The capital costs are upto 11 kV substations and do not include distribution costs. The prices for plant and work,except where specifically stated, are those prevalent in the middle of 1947.

3. In some of the paragraphs herebelow, a reference is made to the average self-supporting rates. It should naturally not be taken that all consumers will get electricity at these rates. Different classes of consumers will get different rates,some higher than the average,others lower than the average. In order to give an idea as to what rates will be applicable to different classes of consumers against a particular average rate, a table has been worked out to serve as an illustration. This table is appended ~~xx~~ hereto as an Enclosure I.

4. Preliminary examination of the problem before the preparation of the first note showed that a comprehensive system of transmission and distribution of Jog Power covering most of the load centres in the South of the Province would entail a capital cost of nearly 3½ crores of rupees. Owing to the paucity of immediately available loads, the recurring deficits were found t

o be enormous and it was further found that these deficits will ontinue for an indefinite period. This proposal was, therefore, not pursued. In order, however, to explore all possibilities of using the Jog Power, certain assumptions for load development which may be brought about by the industrial policy of Government were made and investigation was carried out for the use of Jog Power in three separate areas, viz. (1) Hubli-Gadag area, (2) Gokarn-Honavar area, and (3) Haveri-Ranibennur area. The note submitted to Government covered these three areas and it showed that even if the assumed loads were built up quickly, the recurring deficits for the Hubli-Gadag area for a ten year period would be very big and thereafter would continue for an indefinite period. To a lesser extent same was found to be the case for the other two areas. As a result of the further investigation of Superintending Engineer(Hydro), the position for these separate areas has altered for the worse for Haveri and Kanara and is much the same for the Hubli-Gadag area. Modifications in regard to load and costs found necessary are reflected in the tables I and II. A reference is also invited to Sketch I attached.

Table I.

Area	Load in kW Original Survey.			Load in kW. Revised Survey.		
	First year of service kW.	Fifth year of service kW.	Load in kW. Tenth year of service.	First year of service	Fifth year of service.	Load in kW. Tenth year of service.
1	2	3	4	5	6	7
1 HUBLI:						
)including Belgaum, Gadag and Dharwar.	4,000	7,000		3,350	8,000	
)The above & Dandeli group.			16,000 (Rly.load is included)			16,500 (Rly. load is included)
2 HAVERI: including Byadgi, Ranebennur & large scale irigation	550	1,600	2,300	250	1,300	1,800
3.KANARA: including Honavar, Kumta, Gokarn & forest industries.	1,450	2,350	2,600	70	1,300	1,600

Note:- In the revised forecast, the possible installation of two spinning mills at Gadag, one at Byadgi and a few extra items of load in each of the main load centres have been taken into consideration. The Government of India have not yet granted licenses for these new textile mills although the parties are trying to secure them. Likewise, although the M & S.I Railway authorities made an enquiry for about 5000 kW of power required for traction purpose between Londa and Marmagoa and which has been included in the forecast, it is not known when they will take a decision in the matter. The proposals for the pulp and paper industry on account of which a load of 1200 kW has been included are also uncertain as the Forest Department have yet to confirm the quantity of Bamboo available for regular supply to the factories; and no company has yet been floated for the manufacture of pulp and paper.

Table II.

Area	Capital Cost in lakhs of rupees. Old	Revised.	Load kW. Old	Revised.	Self-supporting rate anna/unit Old	Revised.	Deficits in lakhs of R Original first note.	Revised.	Revised at self-supporting rates
1	2	3	4	5	6	7	8	9	10
1.HUBLI. I Stage- (a)including Belgaum,Gadag, Dharwar and Nirsagar(5 yrs. service).	136	153	7000	8000	0.87	0.85	*33	*36	25
II Stage- (b)the above & Dandeli group (10 Yrs.service)	233	236	16000	16500	0.75	0.72	₡91	₡81	48
2. HAVERI: including Ryadgi,Rani-bennur & large scale irriga-tion(10 Yrs. service).	34	35	2300	1800	1.00	1.25	£10	£16	11
3.KANARA: including Honavar, Kumta & Gokarn (10 Yrs.service).	48	51	2600	1600	0.75	1.47	∠ 9	∠27	17

* at 0.7 anna a unit) For the first note, it was considered that loads can only be developed if rates of this order were adopted and the deficits shown in column 8 and 9 above are based on these average rates.

₡ at 0.55 anna a unit)
£ at 1.0 anna a unit)
∠ at 0.75 anna a unit)

5. It will be noted from column 8 and 9 of Table II, that deficits on the basis of the rates which were then considered necessary for the development of the load referred to in the first note for the Hubli area are not substantially different from those indicated in the first note.They are,however,substantially higher for Haveri and Kanara areas.The self-supporting rates for the Hubli area are substantially the same as on the last occasion,whereas the self-supporting rates for Haveri and Kanara are substantially higher,because of the reduced loads.If it were possible to sell energy at the revised self-supporting rates,the deficits to be incurred in ten years in Hubli area would be of the order of Rs.48 lakhs; in Haveri area, of the order of Rs.11 lakhs; and in the....

the Kanara area, of the order of Rs.17 lakhs. During the Superintending Engineer(Hydro)'s visit he was told that ind trialists would be prepared to pay these relatively high se supporting rates. It is,however, doubtful if they will actua do so,when the supply comes to be made.

Further proposals.

6. It is reasonable to assume that Kalinadi will be sooner or later developed and it will service practiaally the whole of the South of the Province. Any transmission and distributi system that may be laid out in this area should,therefore,be such as can be utilised effectively for the distribution of Kalinadi Power when it becomes available. In order that Government may have a comprehensive view of the problem, studies have been made for a system of transmission and distribution for (1) Jog Power by itself, (2) Kalinadi Power by itself and (3) to start with Jog Power to be substituted by Kalinadi when developed. Probable transmission and distribution systems for each alternative are given in the Sketches II,III and IV attached. The approximate capital costs and average self supporting rates of supply and deficits have been worked out fo all these three schemes.This is done with the view that Government may have an idea of the total extra deficit which they will have to incur if Jog Power is made available to serve the loads which will later be taken over by Kalinadi.

Jog Power by itself- Sketch II.

7. In the preparation of the estimates,as per layout in Sketch II, the following considerations have been kept in mind:-

(1) The 38 kV transmission line from Hubli to Belgaum is to be taken via Haliyal and Khanapur to facilitate picking up several items of loads en route. This route would facilitate tieing up of the Kalinadi power station with this sytem in due course and also provide the required power for large scale forest industries if and when they are developed.

(2) The main 110 kV trunk line to Hubli is to be tapped n Sirsi to transmit power to the Kanara and Haveri areas over 3 kV transmission lines,through territories possessing future prospects of picking up loads en route.

8....

8. The estimate for the proposal Sketch II covers the following :-

(1) Single circuit 110 kV main line from Jog to Hubli with double circuit 33 kV branch lines to Gadag, Belgaum and Dandeli (Kalinadi area).

(2) 33 kV double circuit branch line from Sirsi outpost to Haveri via Hangal and 11 kV lines to Byadgi and Ranibennur.

(3) 33 kV double circuit branch lines to Mudigare and 11 kV lines to the coastal towns of Kanara.The ~~k99~~ 110 kV line from Jog to Hubli would be of single circuit upto 5 years of service and double circuit thereafter,provided by then Kalinadi power station has not been put into commission. Necessary distribution lines of 11 kV have been included for certain extra load centres that are considered probable near the main load centres.

9. The loads assumed,capital cost and average self-supporting rates and deficits are shown in the following table- Table III.

Table III

Area	5 years of service.			10 years of service.		
	Capital cost in lakhs of Rs.& loads.	Self supporting rate anna/unit	Probable deficits in lakhs of Rs.	Capital cost in lakhs of Rs.	Self-supporting rates anna/unit.	Probable deficits in lakhs of Rs.
1	2	3	4	5	6	7
Hubli area(including Dandeli).	Rs.174 lakhs. (8700 kW).	0.86	29	Rs 245 lakhs. (16500 kW)	0.73	58*
Haveri area(including Hangal).	Rs 60 lakhs (1800kW)	1.63	12	Rs.60 lakhs (2300 kW)	1.38	15*
Kanara area(including Karwar)	Rs.60 lakhs. (1600 kW)	1.38	11	Rs.50 lakhs (2000 kW)	1.20	14*

* Provided the scheme is carried out as a whole and the average self-supporting rates are realised, the scheme is expected to become self-supporting after 10 years of service with (58+15+14) i.e. Rs.87 lakhs written off for the whole area.

Kalinadi Power by itself-sketch III.

10. The approximate capital costs, rates and deficits are noted below for the Kalinadi scheme as a separate proposal as per Sketch III. The estimates for Kalinadi scheme are very rough and approximate and subject to alteration after the data and report from the Associated Consulting Engineers are available. The estimates are based on prices prevalent at the end of 1945. These being readily available have been adopted. It is difficult to envisage what the prices will be when the orders for machinery and equipment for Kalinadi scheme are placed, say about 7 years from now. It may be stated that the price level of 1945 was about twice the pre-war level.

If Kalinadi were developed without Jog preceding it, 66 kV transmission system will meet the requirements and the cost is based on that voltage.

Kalinadi by itself- (without being preceded by Jog)- Sketch III- Table IV.

Kalinadi by itself-(without being preceded by Jog)-
Sketch III- Table IV.

SCHEME:	Capital cost in lakhs of rupees.	Effective capacity of the station.	Load in 15 years from now i.e.after 5 years of working of Kalinadi.	self supporting rate anna/unit.	Accumulated deficits after 5 years of working.
1	2	3	4	5	6
KALINADI.	546	24,000kW	19,000*	0.74	Rs.81 lakhs.
	576	36,000kW	30,000*	0.51	

Notes: This cost includes some Rs.35 lakhs for (1) Civil Engineering Works which must essentially be undertaken at the commencement to enable the future extensions for developing the scheme to its maximum capacity of some 80,000 kW. and (2) generating plant which with comparatively small additional cost,will make available another 12,000 kW.

* It is assumed that Government industrial policy will be such as will make possible development of industries which will provide the above loads in say 15 years from now.

Jog Power and later Kalinadi Power-Sketch IV.

11. If it were decided to undertake the work to make available as soon as possible Jog Power and also to proceed with the development work Kalinadi,the position may be expected to be as detailed below.The construction of the transmission system in Sketch IV for transmission and distribution of Jog make take 4 to 5 years,and the Kalinadi may be scheduled to be in commission in about 10 years from now, i.e. Kalinadi may start to take over the load from Jog after Jog has been in service for 5 years.The transmission and distribution system put up for Jog will be utilised for Kalinadi and the two stations interconnected and/or the redundant lines removed for use elsewhere.The capital costs, loads and deficits for Jog-Kalinadi proposal as per Sketch IV are shown below :-

Table V.....

SCHEME	Capital costs in lakhs of Rs.	5 years of service. load kW	Self-supporting rate anna/unit.	Deficits in lakhs of Rs.	10 years of service 5 of Jog & 5 of Kalinadi. Load kW.	Self supporting rate anna/unit.	Deficits in lakhs of Rs.
1	2	3	4	5	6	7	8
Jog.							
(1)1stage	284¢	11,000	Overall average 1.0	88			
(2)Kalinadi	437@				19,000* (effective capacity 24,000 kW).	0.98	133 ∠
(3)Extra cost.	Rs. 39 lakhs (over item(2)				30,000* effective capacity 36,000 kW).	0.60	

Notes:- @ Cost based on 110 kV line to fit in with Jog.
* It is assumed that Government industrial policy for developing industries in this area will be such that these loads will be available, say 15 years from now.

¢ The estimated salvage value of redundant lines when Kalinadi becomes available, and if it is decided not to tie up with Jog is Rs.53 lakhs.

∠ Difference between revenue and expenditure-later includes depreciation + interest on capital cost +capital loss on redundant line after allowing for their salvage value.

12. In order to bringout the use of Jog Power in its most favourable light all the tables relating to the use of Jog Power have been worked out on the presumption that Mysore Government will be prepared to supply power to the extent of 19,000 kW diversified demand at the consuming and equalling about 24,000 KW maximum demand at the Jog H.T.busbars.Enquiries made,however, show that Mysore Government is likely to supply power only upto a maximum of 10,000 H.P.i.e.about 7,500 kW at Jog busbars.This amount of power is too small for distribution at long distance and in wide areas economically.If it were decided to use it, in the industrial area around Hubli and supply restricted to Hubli, Dharwar,Gadag,Dandeli,Halyal and Alnavar,the capital cost and the self-supporting rate will be about Rs.127 lakhs and 0.91 anna/unit respectively.The latter rate is,however,not likely to be realise

and there will be in consequence deficits appreciably in excess of those indicated in Tables II and III.

Jog Power can best be used economically only at relatively short distances of Jog in the absence of existing loads even this can only be done if some new industries are started in the locality.

13. It must be noted that while only a limited amount of power (upto about 10,000 H.P. or 7,500 kW) from Jog is likely to be available, resulting in relatively high average self-supporting rates,Kalinadi is expected to provide some 80,000 kW. As load is developed the cost of Kalinadi Power will progressively decrease, as for instance,when the load reaches 30,000 kW., the average self-supporting rate at 11 kV terminals of consumers is expected to be about 0.51 anna/unit.

14. Comparing Table IV for Kalinadi by itself and Table V for Jog plus Kalinadi, it will be noted that the extra capital cost plus additional accumulated deficit- both to be written off- which will have to be faced in order to advance supply of power in this area by about five years by making Jog Power available and developing Kalinadi- both as soon as possible-is estimated to be of the order of Rs.174 lakhs.This is made up of extra capital to be written off,i.e.284+437-53(salvage value)-546(Kalinadi by itself)=Rs.122 lakhs.Additional recurring deficits 133-81(Kalinadi by itself)=Rs.52 lakhs.The deficit can, however, be more correctly estimated after the report on Kalinadi is received from the Associated Consulting Engineers.

15. It is a matter for Government to consider whether it is desirable to write off about Rs.174 lakhs of rupees in order to make power available in this area about 5 years ahead of Kalinadi.

16. It may,however,be stated that the industries and licensees now existing have already planned extensions without taking into account the possibility of power supply from Jog.Some of these are:- The Electric Power Station and Spinning Mills at Hubli, the Spinning Mills at Gadag,the Electric Power Station at Belgaum.Likewise,the sponsors of some of the future

industries....

industries, e.g. Sugarcane cultivation and sugar manufacture, have under consideration installation of thermal plants, if Jog Power is not made available.

17. The report of the Associated Consulting Engineers(India) on the Kalinadi investigations is expected to be received at about the end of the year (1947) and that of the Industrial Officer proposed to be appointed by the Educational and Industries Department for the investigation of the Kanara Industries may also be available by then. By then, definite information may also be available about lift irrigation possibilities in the area from the Director of Agricultural Engineering to whom information called for by him has been supplied. It would be best that the matter may be considered again when these reports are available.

Sd. B.K.R.Prasad,
21/8/47

Enclosure I.

The following table must be taken only as an approximate illustration of the rates which will apply to individual consumers if it is proposed to realise the various average rates, mentioned ..... See Table III.

Area.	Hubli area, average rate 0.86 anna a unit.	Haveri area, average rate 1.33 anna a unit.	Kanara area average rate 1.20 anna a unit.
1. Licensee (Large & small)	1.00* 1.25	1.50*	1.5*
2. Big mills & workshops.	0.9*	1.00*	0.9*
3. Water supply.	0.8*	1.25*	-
4. Large scale Irrigation.	0.9*	1.5*	-
5. Gins, Presses, small industries & miscellaneous.	2.25@	2.5@	2x@ 2.5@
6. Small lift irrigation.	2.25@	2.5@	2.5 @

* at 11 KV
@ at 100 volts.

4VPA
4/2/48

Notes of Inspection and Investigations on the possibilities of supplying power to the Karnatak Districts from the Jog Power Scheme of Dr.B.K.R.Prasad.

Commercial data and availability of raw materials:

Attempts were made to ascertain the cost of coal, fuel oil and firewood in the existing power stations and industrial plant and also the approximate corresponding cost of energy. The quantity of raw materials produced and consumed in the industries were ascertained wherever possible. With regard to future developments, the details and status of the organisations responsible for this were noted.

The Public Works Department, Revenue and Forest officers were contacted and all the available data regarding lift irrigation and power required for the utilisation of various commercial crops and of forest resources were obtained. As there was no geological officer available, no definite information could be obtained regarding power required in future for metallurgical and mining purposes.

Technical and Financial Data:

Actual figures regarding the amount of power required for each of the industries were obtained from the managers and engineers of the respective factories and workshops. Actual cost figures were checked up by reference to their official statements.

Facilities for transport, transmission line routes and Substations:

Wherever possible the railway and road communication for location of a substation and layout of transmission lines were checked by personal inspection. The condition of forests was seen and ascertained by enquiries from local people, the facilities of transport by rail and road and sea communication were ascertained.

General Report:

1. The following places were inspected:

Belgaum District:	Dharwar District.	Kanara Distt.
(1) Belgaum.	(1) Dharwar.	(1) Londa
(2) Khanapur.	(2) Hubli.	(2) Supa
(3) Rakaskop.	(3) Annigeri.	(3) Dandeli
	(4) Gadag.	(4) Kulgi
	(5) Hanagal.	(5) Yellapur.
	(6) Haveri.	(6) Sirsi
	(7) Byadgi.	(7) Karwar
	(8) Savanur.	(8) Ankola
	(9) Ranibennur.	(9) Gokaran.
Bijapur District.		(10) Sanekatta.
(1) Bagalkot.		(11) Gundbala.
(2) Bijapur.		(12) Mudijeri.
(3) Korti.		(13) Kumta.
		(14) Honavar.
		(15) Bhatkal.

2. Important persons interviewed.

Belgaum:

(1) Mr.Kulkarni,M.L.A.,and also The President and Chief Officer, Municipality.

(2) Mr.Trottman, Commissioner, Southern Circle.
(3) Mr.Sheik,Collector.
(4) " Little,Superintending Engineer,Southern Circle.
(5) " Choksy,Executive Engineer,Roads & Buildings.
(6) " Mane, " ,Postwar Reconstruction.

Dharwar:

(1) Presidents Municipality & District Local Board.
(2) Executive Engineer,Dharwar.
(3) Engineer, District Local Board.
(4) Manager, Dharwar Electric Supply Co.

Hubli:

(1) President,Municipality.
(2) Mr.Kembhavi of Deccan Fertilizer and Industries.
(3) Mr.Walvekar, " " and Advocate.
(4) Mr.V.R.Sirur of Ginning Co. and Karnatak Chamber of Commerce.
(5) M Proprietor,Bharat Mills.
(6) " ,Ghodke Works.
(7) " ,Duddikar Works.
(8) Deputy Engineer,M.S.M.Ry. D.T.S.Hubli section.

Karwar.

(1) Mr.R.M.Prabhu,M.L.A.,
(2) Mr.M.A.Pai --
(3) Presidents,Municipality and District Local Board.

Gokarn:

(1) Mr.Gopi, M.L.C.
(2) Mr.S.R.Nadkarni,Salt Works.
(3) Mr.Kikeri, Executive Engineer.

Sirsi:

(1) Mr.S.P.Pandit, President, Coop.Bank.
(2) Mr.Nilekini, Landlord.

As mentioned above, the leading industrialists,businessmen, citizens,officers of Public Works Department,Forests and Revenue Department,Railway Department,Presidents and Members of Municipalities and District Local Boards were interviewed and all the local information regarding natural resources,the capacity of the mills,factories and workshops,and future prospects were ascertained,verified and checked up with data obtained in previous surveys by inspection of the most important and representative mills, factories and workshops.

Meetings:

The information given in the prose note regarding power supply to this area was explained to the people in detail and the various local problems were discussed. The municipalities of Hubli and Dharwar, the Karnatak Chamber of Commerce held

public meetings when I explained all the information connected with the proposals and asked them to be specific in their load calculations. The implications of the cost of long distance E.H.T transmission lines at the present high level of prices, the absence of large industrial load demands at a moderate distance from the source of power supply and the consequent high cost of transmission were explained to them. When the rates of 0.87 for Hubli area and 1.38 for Ranibennur, 1.2 for Kanara area were intimated to them, they were prepared to pay whatever optimum rates are feasible, especially as their fuel charges are very high. (Vide report in the Samyukta Karnatak, dated 4-5-47).

Firsthand information was obtained from the Superintending Engineer, Southern Circle and Executive Engineer, Dharwar, regarding lift irrigation prospects, from the Conservators of Forests regarding prospects of wood industries and pulp and paper manufacture. The Commissioner, Southern Circle and the Collectors of the Districts gave valuable general information and help.

In most of the towns the information collected, checked up with the data obtained in the previous load survey and a few extra items of load were noted wherever they were not included before. The total existing load works out to about 10% more than what was previously calculated, which is to be expected as several small industries have sprung up during the last two years.

The existing loads in this area may be divided into the following categories:-

1. Textiles: (a)Spinning Mills, (b)Cotton gins and presses, (c) Silk throwing plants and reeling machines.
2. Vegetable Oils: (a)Groundnuts, (b)Seasame (b)Kusbe (d)Castor (e) Linseed.
3. Potteries and Ceramics: (a)Brick (b)Tiles and Refactory and (c) Cement(Future).
4. Mechanical Industries: (a) Private and Railway Workshops automobile Foundries (b)Repairs.
5. Wood Industries: (a) Saw mills, (b)Plywood factory (c)Cabinet making and (d)Pulp and paper(future).
6. Rural Industries: (a)Rice mills (b)Flour Mills Hullers (c)Sugarcane crushers.
7. Fertilisers & Chemicals: (a) Bone crusher mills, (b)Salt works, (c)Caustic soda and (d)Chlorine(future).
8. Irrigation Pumps: (a)Well irrigation, (b)River & Canal water lift pumping.

The availability of cotton, natural silk,oil seeds,all kind of timber including high grade teak,bamboo and various useful minerals such as iron ore, manganese ore, limestone,gold bearing quartz and bauxite is an important factor in the prospects of building up future industries in this area.

The railway workshops at Hubli are the biggest on the metre gauge section of the M.S.M.Railway and are likely to be expanded.

The saw mills of the forest department and the plywood works at Dandeli are very well organised and are expected to be expanded in the near future. The salt works at Sanekatta(near Gokarn) are organised by a Cooperative Society and produce about 2,70,000 maunds per year and its members are proposing to install a causti soda and chlorine plant as an adjunct to a pulp factory near their works,if conditions are favourable and concessions are obtained for the use of bamboo.

The Forest Department are making efforts to give facilities for a pulp and paper plant and have suggested two or three places such as Gundbala,Dandeli,Bomanhalli etc.

The 'Grow More' food campaign is being vigorously pursued and proposals for lift irrigation from rivers and wells are being put up by the Irrigation Department,sugar cane plantations are being organised by three groups of companies and sugar factories are being planned in the following centres:-

(1) Rakaskop near Belgaum by Narendra Singh Singhi.
(2) Lakkikop near Hangal by the Karnatak Sugar and Collulose Alchohol Limited.
(3) Near Bagalkot by Mr.S.S.Sakri.

Two textile mills are being planned by the following and are likely to be located near Gadag :-

(1) Rao Bahadur S.S.Yelamali,Gadag.
(2) Cotton Co-operative Soeiety,"

The Bombay Silk Filatures Limited, have taken up extensive work on silk worm rearing,mulberry plantations and have started a silk throwing and filature plant at Modge about 10 miles from Belgaum.

The two existing spinning mills at Hubli and Gadag now running on steam power have arranged for extensions of their plant for which machinery have been ordered. They are owned by Bombay Firms and are well established.

There.....

There are about 759 gins all over the Karnatak and are likely to be adequate for the present requirements.

The location of the industries and load centres is shown in the accompanying statement and sketch. In spite of the above resources and the plans of industrialists,the lack of fuel facilities at a moderate rate and good water supply is a serious handicap which can only be overcome by supply of power. The present cost of coal is about Rs.40/- per ton at Hubli and of fuel oil about Rs.125/- per ton.

The average cost of fuel and & minor operation charges work out to more than 1.2 anna per unit in big mills such as Bharat Mills, and over 1 anna/unit in Railway Workshop.(This does not include overhead and supervision charges).

Kanara District is very backward and lacks all modern amenities such as Railway,Water supply,sanitation and electric supply evan of Diesel Station type. Except for a few rice mills and small saw mills, there are no industries worth mentioning.

The little industrial progress in the Karnatak Districts is due to the strenuous effort of the organisers and the availability of trained workers and craftsmen.Coal,oil and firewood are being used to their best advantage in whatever quantities available.

Some statistical information regarding,cotton,oil seeds,are shown in the Appendix B. The fact that only about 30,000 bales of cotton are being used in the mills at Hubli and Gadag whereas nearly 1,50,000 bales are produced in the cotton area,shows that there is room for expansion,if facilities are available.

The existing and probable loads as per previous line routes in the next 5 and 10 year periods are shown in the table No.1. The main items are noted in comparison with previous survey.

Table No.....

Table No.1

Estimated loads in different areas.

Area	original surveys kW.			Present Survey kW.			
	1st year of service	5th year of service	10th year of service	Present load potential.	1st year of service	5th year of service.	10th year of service.
Hubli including Dandeli.	4000	7200	11300	4100	3350	8000	12000 16500*
Kanara.	1450	2350	2600	200	70	1300	1600
Haveri.	550	1500	2300	500	250	1300	1800
Total Diversified.	5500	10000	14800	4400	3300	11000	14000 18000*

Note: All figures are in kWs. * Including Ry.load at Londa.

In Hubli area, the extra loads are due to the inclusion of a few items such as the existing municipal pumping station, small mills and newly proposed sugar factories.

In the Kanara area, the probable load of caustic soda and pulp plant has been reduced as the proposals of the Sanikatta people is for a Caustic Soda plant of only 5 tons day and pulp plant of 10 tons day. Even this has to be confirmed.But some extra load of refrigeration for fisheries has been included.

In the Hangal Haveri area, the load of a proposed sugar factory and the seasonal load of rice mills and small industries of Savanur have slightly added to the previous loads.But the irrigation load is only half of the original estimate.The Extra load of few new plants show some slight increase(of load.) Sirsi is a big business centre and Mr.S.P.Pandit and the Municipal councillors have written to state that about 500 kWs.are likely. But we have taken a conservative figure of about 200 kWs.only.

If the shipbuilding industry which is proposed by Mr.A.M. Bhatt is taken up either at Karwar or Bhatkal, and is likely to materialise, it will add possibly a load of about 500 kW in 5 years and go up to 1000 kW in 10 years. But this has not been taken into account.

The revised load figures on modified line routes are not i the accompanying statement for purposes of comparison. More details in appendix A.

Table No.2

Development ~~xfxkiadxxxxxxxxxt~~ of load as per modified rou

	Existing load.	Load if service is given in 1952.	Load after 1957.
Hubli,Dharwar,Gadag, Belgaum;Haliyal and Dandeli--	4,100	3,500	8,700*
Kanara area and Sirsi Karwar & Ankola.	200	120	1,600
Southern Dharwar District (Haveri etc.)	500	340	1,800

*This does not include the proposed load of 5000 kW for Railway Electrification between Londa and Marmagao.

As mentioned before, the public of the Karnatak Districts were told about the average working rates mentio ed in the press note.They seem to be quite willing to accept whatever rates Govern ment may fix to make the scheme economically feasible,so that they will get power definitely in the near future. They frequently expressed great difficulties they are undergoing for want of motiv power and desired that their cases should be considered with sym- pathy by the Government to make power available. When questioned about the feasibility of paying higher rates for power, they expressed a desire that big loads with high load factors should be shown preferential rates,whereas the smaller loads would bear a slightly higher rates to make the average rate as per Government requirements. In these days in spite of severe competition from other places such as Bombay where power at a lower rate is availa- ble, they mentioned that advantage over freight charges for raw materials such as cotton, oil seeds and other commodities would give them a fairly good margin to pay higher power rates.They also expressed

expressed that when the loads increase and conditions improve, corresponding reduction in rates, if feasible, should be permitte

The following Organisations were specifically examined about their present working rates:-

(1) Bharat Spinning Mills, Hubli.
(2) Railway workshops, "
(3) ~~Xxxxxx~~ Spinning Mills at Gadag.
(4) Foundry machinery of Ghodke,Hubli.
(5) Municipal pumping set at Dharwar and Hubli.
(6) Licensees at Gadag,Dharwar and Belgaum.
(7) Industrial concerns of Narendra Singh Singhi at Rakaskop.
(8) Manekbag Oil Mills at Belgaum.
(9) Indian refractories, Belgaum.

Even the Conservator of Forests at Dandeli and the Managers of Plywood Factory stated that the average of one anna/unit will be within the possibility of acceptanco. The names of the most important firms whose representatives were willing to give in writing the loads they would consume and the rates they would pay is noted below :-

(1) Bharat Spinning Mills,Hubli.
(2) Rao Bahadur Yelamali & his associations in Hubli and Gadag.
(3) V.K.Sirur and Bros.
(4) Foundry Works of Godke.
(5) Railway workshops,Hubli.
(6) Plywood Co.,Dandeli.
(7) Plywood Co.,Dharwar.
(8) Yelamili Gin & Press (Mr.Matti),Dharwar.
(9) Indian Refractories, Belgaum-Khanapur(Mr.Marathe).
(10) ~~Xxxxxxxxxxxxxx~~ Irrigation & Sugar Works,Rakaskop, Narendera Singh Singhi.
(11) Karnataka Sugar and Cellulode Works,Bombay,(Hangal area).
(12) Bombay Silk Filatures,Mr.Lokur.
(13) ~~Xxxxxx~~ Manekbag Oil Mills, Belgaum.
(14) Damodar Iron Works,
(15) Municipal & Railway Water Works,Dharwar-Hubli.
(16) Karnatak Industries,Byadgi.
(17) Mangavi Bros.,Haveri.
(18) Mr.Shettar,Byadgi.
(19) Mr.Banagar,Ranebennur.
(20) Mr.G.P.Gopi,M.L.G.,Gokarn.
(21) Mr.G.N.Prabhu,M.L.A.,Ankola.
(22) Mr.S.P.Pandit,Nilekini, Sirsi.
(23) Salt Society,Sanikatta. Mr.S.R.Nadkarni.

The Managers of the firms were well posted with their requirements and were conversant with modern methods of running their factories and were anxious to build up their business by utilising the resources of the country around.

Suggestions for consideration:

Although the possibility of putting up ~~water~~ supply lines to the West coast of Kanara and to the border towns of Dharwar such as Haveri etc.,may not be ruled out in priority,it is worthwhile to consider the financial implications if a main trunk line is laid out betwen

Jog and Hubli via Sirsi and suitable provision for putting up a switching and step-down station somewhere between Sirsi and Hangal to facilitate transmission of power to the coastal towns of Kanara as well as to Sirsi, Hangal and group of towns Haveri to Ranibennur as well as lift irrigation from Tungabhadra and Vardha and the probable forest industries near Gokarn or Yellapur

Slight modifications in the route of transmission line to Belgaum may be effected to take on the way the loads at Haliyal, Dandeli, Alnavar and Khanapur, Gadag line may be so designed to take in some of the extra loads observed within about 10 to 15 miles about Gadag.

Main extra loads now envisaged after our recent inspections are noted below:

	Probable Load in 1952
Sirsi and Benavasi	200 kW.
Hangal, Lakkikop & Savanur.	720 "
Dandeli, Alnavar & Haliyal	300 "
Khanapur and Desur	540 "
Bombay Silk filatures	100 "

The loads expected after 5 years are separately indicated in the statement.

Gadag Bagalkot Section: Since last month, a few applications for large loads have been received from Bagalkot for the following industries:-

(1)	Deccan Cement Co.	.. 1600 kW.
(2)	Bhooma Radi for Spinning Mills	.. 1000 "
(3)	S.S.Sakri for his industries at Bagalkot, Guledgud and Ilkal	400 "
(4)	Executive Engineer for lift irrigation near Almatti and Bagalkot.	1200 "
(5)	Application from Kopbal for textiles.	1500 "

First of all, it will have to be ascertained whether necessary priorities and permits have been secured to start these industries.

Inspection of Transmission line routes: I inspected and checked practically all the routes of transmission lines connected with the preliminary estimates. The Section from Jog to Sirsi, as reported before the Chief Engineer is in heavy forest area. The Section from Kumta for about 20 miles is a difficult route, but the forest road thereafter runs fairly straight and forest thins out considerably.

The.....

The Section from Sirsi upto and beyond Haliyal runs through thin forest and thereafter with scrace vegetation.Except for the very heavy forest section, the transmission lines can be taken in fairly straight line routes and in areas like Hubli, Belgaum,Dharwar,there is no jungle and line construction would be easy.

Although the people are enterprising and anxious to start industries in the Karnatak districts,and their financial position is good,if not of the same order as that of capitalists in Bombay,they are under a serious handicap for want of fuel and difficulties of obtaining permits, For the new industries such as pulp,paper and plywood,and for utilising mineral resources,special help from Government is asked for and everything depends on a thorough industrial and load survey coupled with geological inspection of mineral resources.

Summary: (1) Loads previously assumed were generally confirmed. But some extra loads of about 2% in 1st year and 10% in 5th year are likely to be available.The total existing load in Hubli and Dharwar area is about 4100 kW and in the Kanara area 200 kW and Haveri area 500 kW.

(2) As it will take about five years by the time service is given even if the scheme is approved now,there is likelihood of securing larger loads in these areas, e.g. about 8700 kW in Hubli Section,1500 kW in Kanara area towns and 1800 kW in Haveri area, at the end of 5 years of service.

(3) It is worthwhile considering supply of power to the Kanara coastal towns and Haveri border towns by a tap from the main trunk line from Jog to Hubli, if it is found more economical than individual supply lines,provided the line to Hubli is approved.

(4) The industrialists and businessmen of Karnatak districts although at present behind in the development of their resources,are active and enthusiastic in bringing up such industries that will help in the progress of their district.Finances are not lacking but a certain amount of help and support from Government seems to be essential as new industries involve large quantities of raw materials etc which are in the state forest or to be mined from Government lands.

Sd. B.K.R.Prasad

Statement of approximate loads at the different centres (Diversified max. demand in kW).

	Existing load kW.	Potential after 5 years of service kW.	Potential after 10 years service kW.
1. Belgaum area.	400	2000	3300
2. Dharwar "	350	700	900
3. Hubli "	2200	4100	4800
4. Gadag "	800	2000	2500
5. Dandeli "	300	800	1600
6. Coastal towns of Kanara & Sirsi.	170	1600	2000
7. Hanagal area.	200	650	-
8. Haveri area.	360	1300	1800

The details which make up the total of the Diversified loads of items 1,3,4,5,6,7 and 8 are noted in the accompanying sheet.

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Belgaum.	Existing.	Potential 5 years.	Potential 10 years.
Belgaum Town.	390	1100	1200
Desur.	---	50	100
Rakaskop.	---	750	1900
Khanapur	50	300	430
Total	440	2200	3630
Diversified i.e. 1.1	400	2000	2000
3 Hubli Area.			
Hubli .	2200	3510	3880
Nirsagar.	-	1000	1400
Total.		4510	5280
Diversified. 1.1	2200	4100	4800
Gadag			
4.Gadagtown.	630	1940	2470
Annigeri.	90	90	90
Mulgund.	90	90	90
Lakshmeshwar.	70	80	100
Total.	880	2200	2750
Diversified.	800	2000	2500
5.Dandeli.			
Dandeli.	160	630	1460
Haliyal.	80	100	100
Alnavar.	90	150	200
Total	330	880	1760
Diversified.	300	800	1600
6.Coastal towns of Kasara and Sirsi.			
Karwar.	40	200	250
Ankola.	20	100	120
Gokarn.	20	60	100
Kumta.	40	80	120
Honawar.	10	80	120
Sirsi.	60	200	230
Mudigeri.	-	1000	1200
Total	190	1720	2160
Diversified . 1.1	170	1600 (Approx)	2000(Approx)
7. Hanagal Area.			
Hanagal.	40	60	70
Lakkikep	-	500	500
Savanur.	180	210	250
Total.	220	770	820

	Existing	Potential 5 years.	Potential 10 years.
Diversified 1.1	200 /xxxx	700	750
8. Haveri Area.			
Haveri.	120	200	260
Byadgi	120	550	700
Ranibennur	150	450	550
Lift Irrigat. at Havanur area.	-	200	400
at Airani.	-	30	70
Total.	390	1450	1980
Diversified i.e. 1.1	-360	1300	1400

Appendix 'A'. 69

The loads in the various centres have been checked by personal inspection and are noted below for comparison.

	Approx. load 1st year of service.	Expected in 5 years after service is started.
(1) Hubli area:		
(a) Previous Note	4000 kW.	7000 kW.
(b) Present Survey.	4100 kW.	8700 kW.
(2) Haveri area:		
(a) Previous note.	550 kW.	1500 kW.
(b) Present survey (including Lakkikop & Hanagal).	340 kW.	1800 kW.
(3) Kanara area:		
(a) Previous note.	1450 kW.	2350 kW.
(b) Present survey. (including Karwar & Ankola.)	120 kW.	1600 kW.

In the previous estimate the existing loads were taken into account while calculating the revenues at the end of 1st year's service. But on enquiry from the various Industrialists and business-men the loads have been modified to possible definite requirements, since it will be nearly 5 years before service ~~x~~ from Jog Power will be available, and these loads are taken for purpose of present calculation.

The loads now expected in the 1st, 5th and 10 years of service are noted again for reference.

	1st year service. kW.	5th year service kW.	10th year service. kW.
Hubli area. Hubli with Ry.load.	3500	8700	16500
Haveri area.	340	1800	2300
Kanara area.	120	1600	2000
Total	3960	12100	~~16500~~
Diversified.	3600	11000	17000

As these loads are based upon existing plants and those expected in certain areas close to the main centres, slight deviation are required in the transmission line routes, and the location of sub-stations and the type of equipment to be installed, the capital costs are modified accordingly.

Note regarding resources of Southern part of Bombay Province with reference to facilities of x industries and a Port in Kanara District.

The four districts, Belgaum,Bijapur,Dharwar and Kanara are rich in resources such as cotton,oil seeds,minerals including iron ore, bauxite,limestone and manganese ore.

2. The biggest forests in the Bombay Province are in the Kanara and Belgaum districts with very valuable stock of good timber (first class teak) and large quantities of Bamboo suitable for ~~pulp~~ pulp and paper.Besides this,thereare soft woods eminently suited for plywood and match manufacture,Hydro electric resources in this area are such that in future if it develops,larger industries would be located in these districts.

3. If a port is established,the ship building and other auxiliary industries will spring up.On account of large quantities of cotton and silk that are likely to be available,textile mills will probably be established.

4. The following statement shows the approximate tonnage and also the approximate acreage of land under cultivation:

(i) Cotton:	nearly 150,000 bales per year.
(ii) Oil seeds of all kinds:	about 600,000 tons,from which oil to the extent of 200,000 tons could be made and cake to the extent of 370,000 tons.
(iii)Cereals:	75,000 tons.
Pulses:	90,000 tons

(iv)The large quantities of limestone available near Bagalkot would yield cement to the extent of 200000 tons, annually if properly developed.

(v) The extent of bamboo in the Kanara forests is expected to be more than 100,000 tons and at least 50,000 tons could be utilised for pulp and this can be shipped out of this territory.

(vi) Iron ore if developed in due course would yield at least 60,000 tons of iron and steel a year and aluminium to the extent of 5,000 tons/ 1,000 tons a year.

(vii) The total quantity of sugar cane grown in this area is expected to be 600,000 tons,out of which at a very conservative estimate,about 3,000 tons of sugar would be expected.

(viii) If the Rayon industry is established in the near future, the production of 5,000 tons a year may be expected and chemicals about 20,000 tons a year would be required for the processes.

5. The estimate of cultivated land for various purposes very roughly noted below :-

i)	Rice:	about	400,000 acres.
ii)	Wheat:	"	650,000 acres.
iii)	Other crops such as barley,maize,Jwari, grame etc.	"	3,300,000 "
iv)	Other food grains.	"	750,000 "
v)	Oil seeds.	"	624,000 "
vi)	Sugarcane and other sugars.		117,000 "
vii)	Cotton:		1,235,000 "
viii)	Other fibres:	"	20,000 "
ix)	Tobacco:	"	20,000 "
x)	Reserve forest area:	"	2,900,000 "

6. There is a large import of coal,fuel oil and other requirements for the existing industries, The quantity of timber is not indicated in the estimate,but it will be one of the biggest items as Kanara forests are very thick and yield almost all the timber required in the Bombay Province and Neighbouring territory.

7. Total livestock in these Districts is of the order of 33,000 which presupposes a large quantity of hides that will be exported.

8. The greatest need in southern part of Bombay Province would be easy transportation upto the ports by constructing railways from junction points such as Hubli to the coastal area.

9. Several years ago one of the ports in Kanara District(Karwar) seems to have been reported as a suitable port and would have developed to a great extent if facilities were provided.Besides the traffic from the Province,any good port in Karwar will facilitate the export of raw materials from Hyderabad,Bellary District and other neighbouring territory and import of machinery, coal and cloth especially if the distance from the port towards west is considered as short if not shorter than the existing ports The accompanying statement gives some idea of import and export from Karwar even under the present conditions without facilities of railway and a big harbour.

Present imports and Exports into the territory near Karwar.

	Imports value. in Rs.	Export value in Rs.
(1) Bricks, Tiles and Building Materials.	114,600	18,000
(2) Cocoanus fruits and vegetables: Grains etc.	32,000	88,000
(3) Agriculture, Hardware etc.	14,250	24,000
(4) Miscellaneous including apparel, ropes, coir, etc.	20,000	15,000
(5) Drugs medicines.	43,000	
(6) other textiles.	10,000	
(7) Cigarettes, tobacco etc.	46,000	26,000
(8) Teakwood and other woods		380,000

Tonnage of smaller imports and exports from Karwar.

	Import Tons.	Export Tons.
(1) Teakwood:		5,000
(2) Firewood.		6,200
(3) Sugar, salt, betal nuts, vegetables and grains etc.,	1,080	280
(4) Manure:		77
(5) Cocoanut and other oils	17,000 gallons.	1,100 gallons.
(6) Fish (dry & wet)	128	3,000
(7) Tobacco:		19
(8) Piecegoods.	1,63,000 yds.	6,000

4VPA
4/2/48

Power Station Existing

" " Future

110 K.V. Line

33 K.V. Line

11 K.V. Line

SKETCH I JOG SCHEME

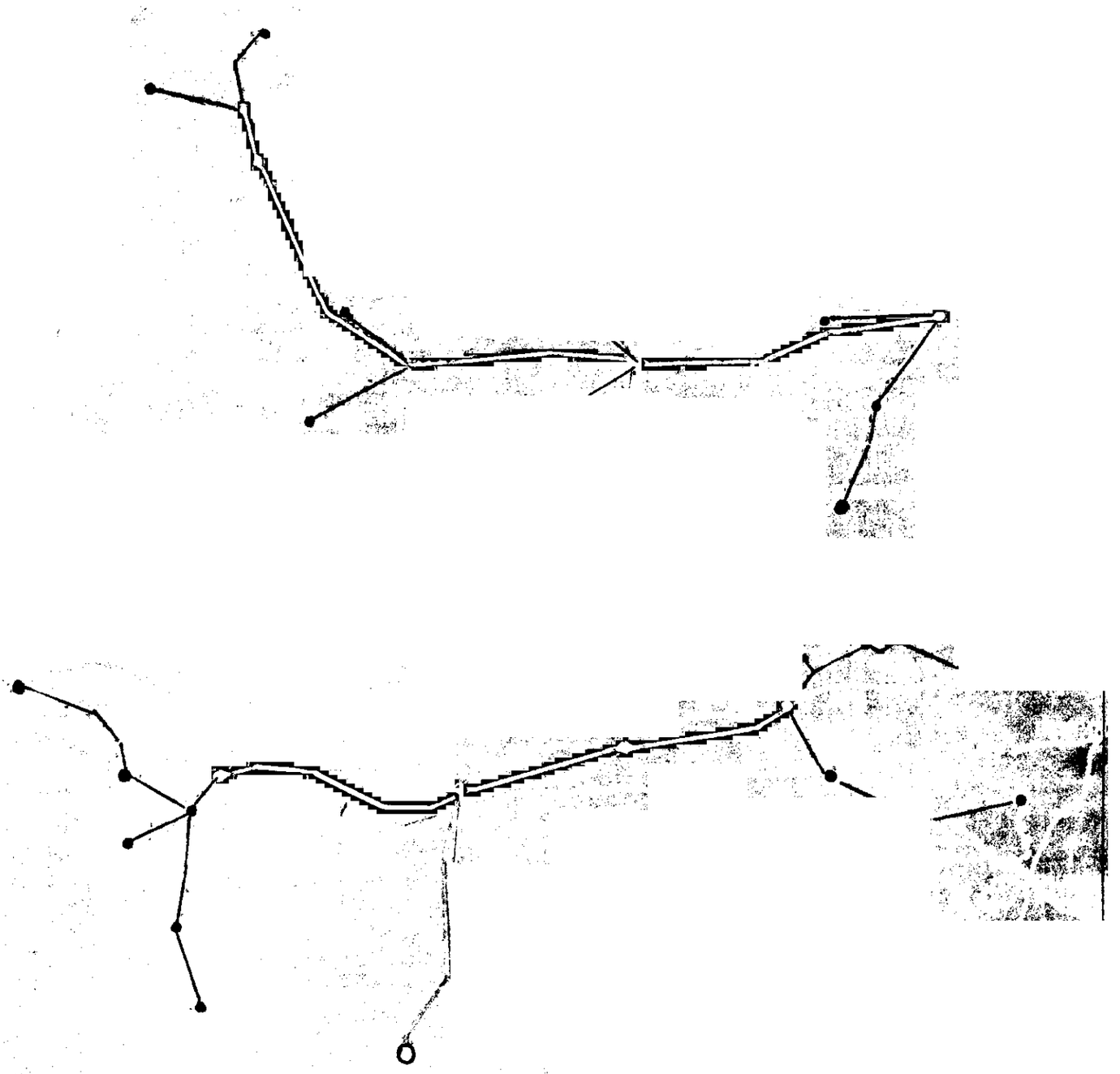
GOVT. OF BOMBAY ELGRID DEPT.

POWER SUPPLY TO KARNATAK AREA.

Traced By R. Joseph.	Checked By
Date 2-2-48	Scale 1.014 Inches = 16 Miles

DRAWING No. MIS. 41

SUPTDG. ENGINEER (Hydro)



- Power Station Existing
- " " Future
- 110 KV LINE
- 33 KV LINE
- 11 KV LINE

SKETCH II. JOG SCHEME

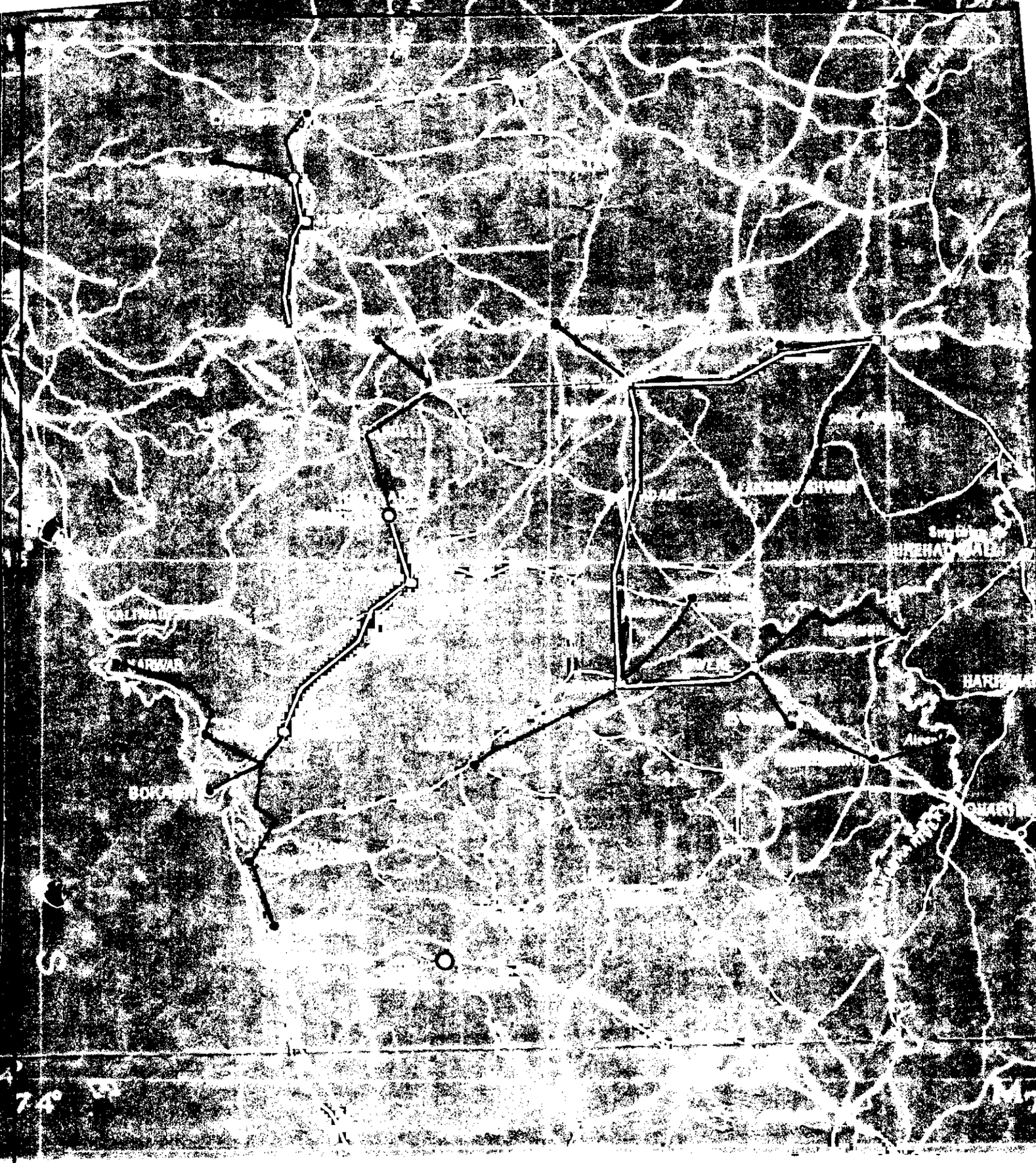
GOVT. OF BOMBAY ELGRID DEPT.

POWER SUPPLY TO KARNATAK AREA

Traced by R. Joseph	Checked by
Date 2-2-48	Scale 1.014 INCHES = 16 MILES

DRAWING No. MIS. 41

SUPTDG. ENGR. (HYDRO)



○ Power Station Existing

○ " " Future

66 KV Line

33 KV Line

11 KV Line

SKETCH III KALINADI SCHEME

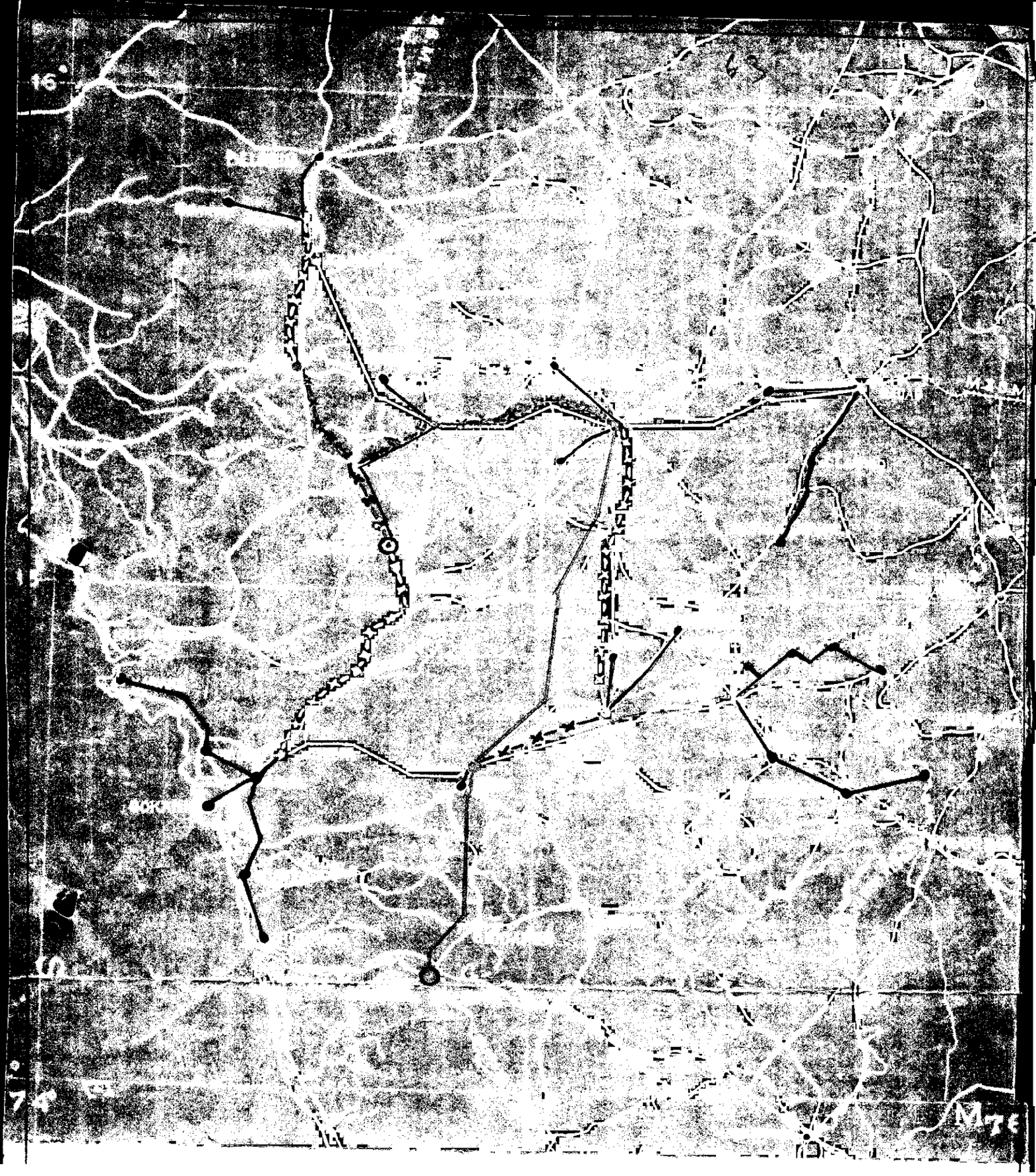
GOVT. OF BOMBAY ELGRID DEPT.

POWER SUPPLY TO KARNATAK AREA

TRACED BY R. Joseph	CHECKED BY
DATE. 2-2-48	SCALE 1.014 INCHES = 16 MILES

DRAWING No:- MIS. 41

SUPTDG. ENGINEER (HYDRO)



Power Station Existing

" " Future

110 K.V Line or 66 KV

" " " (FROM KALINADI)

33 KV Line

" " " (FROM KALINADI)

11 KV Line

SKETCH IV JOG-KALI (COMB) SCHEME

GOVT. OF BOMBAY ELGRID DEPT.	
POWER SUPPLY TO KARNATAK AREA	
TRACED BY R. Sompl	CHECKED BY
DATE 2-2-48	SCALE 1.014 INCHES = 16 MILES
DRAWING Nº MIS. 41	

SUPTDG. ENGINEER (HYDRO)

Use of Jog Power.

I place below the second note on the Utilisation of Jog Power prepared by Dr.B.K.Ram Prasad in consultation with the Chief Engineer and myself.

2. Mysore Government had informed Bombay Government of their willingness to supply 5,000 H.P. at Jog E.H.T.Busbars at 0.25 anna/unit.Informal enquiries made by me show that Mysore Government is likely to supply upto a maximum of 10,000 H.P.only at the same rate,trend being towards reduction.Formal negotiations can only be carried out satisfactorily after Government decision is available on the proposal of Jog Power and the extent of power required.

3. In order to view the Jog Power supply in the best light possible, the assumption has been made that Mysore Government will be prepared to supply power to Bombay Government to the extent of its full requirements during the next ten years.Under such circumstances, as will be seen from Table III of the note, the self-supporting rate in the first five and ten years service in the Hubli area will be about 0.86 anna/unit and 0.73 anna/unit respectively. The estimated deficit in the ten year period will be 58 lakhs of rupees.Actually,however, as Jog Power is likely to be restricted to the maximum of 10,000 H.P.,the self-supporting rate for this amount of power distributed in the Hubli area is expected to be about of 0.91 anna/unit.The acceptable rate at which load can be developed is likely to be lower and consequently deficit will be larger.Although in Table III of the note, total deficit of about 87 lakhs of rupees is shown for all the three areas of Hubli,Haveri and Kanara,there will not be enough power to supply all the three areas.

If,on the other hand,power were to be supplied only to Haveri and Kanara,the figures which should be taken into account are shown in Table II of the note.The self-supporting rates will be 1.25 and 1.47 anna/unit respectively in the ten year period.The deficits will be Rs.11 and 17 lakhs in the ten year period respectively,provided the self-supporting rates can be realised.As, however,this is not likely to be the case,the actual deficits will be larger.It must be emphasised that the load forecast

in the Table includes possible new industries and irrigation loads.

4. In paras.6 onwards of the note, comprehensive proposals for networks of transmission and distribution lines for the whole of the South of the Province have been worked out and Jog Power supply has been compared with the possible Kalinadi supply.The networks have been so laid out that Kalinadi can utilise them after that project is developed. As mentioned previously,power from Jog will for all time be limited to the figure of 10,000 H.P.i.e. about 7,500 kW.Kalinadi on the other hand,it is expected, can be developed to roundabout 80,000 kW. The more it is developed, the lower will be the overall economic cost,as for instance,when 30,000 kW.load is available,the average economic rate at the 11 kV distribution terminals may be of the order of 0.51 anna/unit. The self-supporting rate at which Jog Power limited to 10,000 H.P.-can be supplied in the Hubli area is expected to be about 0.91 anna/unit.Later,when Kalinadi is developed and it takes over the loads previously supplied by Jog, the self-supporting rate when the load is 19,000 kW. is expected to be 0.88 anna/unit and when the load is built up to 30,000kW. the self-supporting rate is expected to be 0.6 anna/unit.On the other hand, if hydro power supply is postponed till Kalinadi is developed,the self-supporting rate with load of 19,000 kW.will be 0.74 anna/unit and with 30,000 kW. about 0.51 anna/unit.The rate will be more favourable when the load is developed beyond 30,000 kW.

5. Jog Power can be made available in about five years from now. On the other hand, it will take about 8 to 10 years to make Kalinadi Power available. If steps were taken to put up transmission and distribution lines as soon as practicable,Jog Power can be utilised in about five years from now.Later on,the load so built up can be taken over by Kalinadi when it is put into commission.By this arrangement, power supply in the South of the Province can be advanced by about five years.This will, however, entail an overall deficit of the order of Rs.174 lakhs which must be written off The actual deficit may be larger than this amount and can only be ascertained more correctly when the report on Kalinadi is rece

from the Associated Consulting Engineers (India).

6. It has been suggested in the last para. of the note that further consideration of these proposals ~~mad~~ may be taken up after the report of the Associated Consulting Engineers(India) on Kalinadi is available by about the end of the year.By them, it is also hoped that the report of the Special Industrial Officer for Kanara may be available.It is further hoped that the Irrigation Department's proposals for lift irrigation in the Haveri area may also have been received by then.

7. If Government were favourably disposed to the use of Jog Power in the South of the Province,the first action as a preliminary to the preparation of a detailed estimate would be to carry out a detailed survey of the transmission routes. In such a survey,only those routes would be dealt with which later can be utilised for Kalinadi.If Government wish this work to be done soon after the commencement of the next fair season ahead of their final decision on the proposals of Jog and Kalinadi,I shall,if so desired,submit my proposals.

Sd. P. B. Advani,
21-8-47.
Elec.Commr.

The 2nd note on the use of Jog power is placed below.A copy has been sent to H.M.,P.W.D.

Id.P.B.A(dvani),
21/8/47

Sec.to Govt.
P.W.D.

u.o.r. No.Elg.52(1~~1~~/8178
Bombay: 21-8-1947.
Encl.Files No.1411/27 I & II
& file No.2004/36I.

4 VPA
& 4/2/48

El.Bf.

In March 1947 the El.Commr.with the Govt.of Bombay submitted a note to Government regarding the utilisation of Jog Power in the Southern part of the Province.A press note was issued in April 1947 indicating the conclusions reached as a result of the survey made by the Electric Grid Deptt.and it was decided to take the following action :-

(a) As suggested by the El.Commr.an officer should be appointed to study the industrial possibilities of the area

and

(b) the El.Commr.with the Govt.of Bombay should carry on personal negotiations with the Government of Mysore with a view to secure the agreed power of 5000 H.P.from the Jog Falls at a reduced rate of 0.125 anna per unit and also to secure addl.power, if required.

Regarding (a):- The Education and Industries Deptt.was requested to take necessary action in this Deptt. memo.No.2004/36-El, dated the 19th April 1947. Since then that Deptt. is being reminded every month but no reply indicating how the question stands has so far been received from that Deptt.From the informal enquiries made in that Deptt. it is however understood that the question is still under consideration of that Department.

Regarding(b):- From the El.Commr's note discussed in the following xxxx para.it will be seen that the informal enquiries made by that officer show that the Mysore Govt.is likely to supply power from the Jog Falls upto a maximum of 10000 H.P. only at 0.25 anna per unit, trend being towards reduction.The El.Commr.has xxxx noted that formal negotiations can only be carried out satisfactorily after Govt.decision is available on the proposal of Jog power and the extent of power required.

2. The H.M.,P.W.D. had desired that Dr.Ram Prasad of the El.Grid Deptt.should visit the south of the Province in connection with the existing loads and the possibility of supplying Jog power in that connection.The El.Commr.has now submitted a note on the utilisation of Jog power prepared by Dr.Ram Prasad in consultation

with the C.E. and the El.Commr.with a covering note by the El. Commr.himself. The El.Commr. has submitted copies of these notes direct to the H.M.,P.W.D.

3. The following are the main points brought out in the notes:-

(i) The Mysore Govt. is likely to supply power only upto a a maximum of 10,000 H.P.,i.e.,about 7,500 kW.at Jog bus bars.

(ii) The Jog power can best be used economically only at relatively short distances of Jog; in the absence of existing loads even this can only be done if some new industries are started in the locality.

(iii) Kalinadi can be developed to round about 80,000 kW.

(iv) Jog power can be made available in about 5 years from now,while it will take about 8 to 10 years to make Kalinadi power available.

(v) The load built up for Jog power can be taken over by Kalinadi when it is put into commission.

(vi) The supply of Jog power in the south of the Province in advance of that from the Kalinadi will however entail an overall deficit of the Rs.174 lakhs(approx.)which must be written off.

(vii) Further consideration of the question may be taken up after the report of the Associated Consulting Engineers(India) on Kalinadi is available by about the end of the year.

4. The point for consideration of Government is whether the power available from the Jog Falls should be utilised in the South of the Province in advance of that available from the Kalinadi Scheme and the El.Commissioner asked to submit his further proposals in the matter at this stage or consideration of the question may be held over till the report of the Associated Consulting Engineers regarding the Kalinadi Scheme is available-vide paras.6 and 7 of the El.Commr's. note.

Id.S.G.J.
27/8/47

Thro' I.B.(II).

I.Br.(II)

5. Portion 'A' on p.153 re: lift irrigation in Haveri area.

This is minor irrigation work and the A & R.D.Deptt.is concerned with minor irrigation schemes.If considered necessary that Deptt. may be requested u.o. to state the position.

Id.G.A.N.
28/8/47.

Scheme's outlined.

Schemes outlined.

The El.Commr. has discussed three alternatives regarding planning of the Electrical Grid Scheme in the Southern part of the Province:

(i) Jog Power by itself,

(ii) Kalinadi Power by itself,

(iii) Jog Power followed by Kalinadi Power.

As we intend to develop the Kalinadi resources as soon as possible the utilisation of the Jog Power can be considered mainly under the scheme outlined in (iii) above.

Supply. The Mysore Govt. had informed us earlier to give only 5,000 H.P. at Jog but informal enquiries indicate that they will be prepared to give us up to 10,000 H.P.(7.500 kW) at their bus bars.They are not prepared to reduce the rate below 0.25 anna per unit.

When the Kalinadi Supply is fully developed an additional 80,000 kW. will be generated making a total of 87,500 kW.~~will be generated making a total of 87,500 kW.~~

Load Survey: A comprehensive load survey is carried out by contacting quite a larger number of industrialists and public workers.The anticipated demands are indicated in the table No.1 in the note (p.85 ante). A demand of $\frac{10,600}{19,900}$ kW. is anticipated in the fifth/tenth year of the service on the assumption that the policy of the Govt.will be towards industrial development in the area; and certain industries which are in the prospecting stage at present do materialise.

Jog Scheme.

The self-supporting rates based on the revised survey are indicated in the table III based on the supply from the Jog source only(Sketch II) in para. 9 (p.93 ante) and the anticipated deficit at the end of 10 years is worked out to Rs.87 lakhs. As even this,is based on a load far in excess of the supply which the Mysore Govt.is prepared to give and hence the actual deficit is anticipated to be much higher. Further,the self-supporting rates are also considered higher than what will ~~xxxxx~~ attract customers and hence the deficit will be higher still.

For the development of Jog by itself,costing Rs.355 lakhs, therefore.....

therefore there is not enough supply; the transmission lines will be too long and the resultant costs unattractive even if Govt.is prepared to write off a large amount.

Jog Cum Kalinadi Scheme.

A probable layout of transmission lines is indicated in the sketch No.IV (p.147).Power will be available under this scheme in 4 to 5 years (from Jog)which later can be augmented when the Kalinadi Scheme comes into operation-after about 10 years.The initial costs,the self-supporting rates,and the deficits of the scheme are given in table No.V(p.97). It is based on an assumption that 11,000 kW.will be available from Jog. The cost of the Jog scheme will be Rs.284 lakhs self supporting rate will be 0.88 anna/unit and the deficit at the end of 10 years will be Rs.133 lakhs.As the supply likely to be received from Jog will be limited to 7,500 kW.and the rates will have to be a little, ~~to 7,500 kW.and the rates will have to be a little~~ less than the self-supporting rates,the anticipated deficit will be higher still. A comparison of the Kalinadi Scheme by itself (table IV) and the Jog followed by Kalinadi (table V) is brought out in para. 14(p.99) and it is stated that the advancement of the supply by 5 years (by taking Jog first followed by Kalinadi)will cost Rs.174 lakhs which will have to be written off.

It is for consideration of Govt. whether the advancement of the supply by 5 years should justify the extra cost(to be written off) of Rs.174 lakhs which figure may probably be exceeded.

It has been suggested by Dr.Ramprasad that further consideration may be taken up after more information is available regarding Kalinadi Project,which is expected by the end of the year.By then something more about the anticipated industrial load will also be known.

The El.Commr.has suggested that if Govt.decide on this report, in favour of the use of the Jog power,detailed survey of the transmission lines will have to be carried out as a first step.The points for orders.

Id.G.G.D(hanak),
2/9/47

The Deputy Secretary (Irrigation and Railways)'s note pages 159 to 162 summarises the proposals now submitted by the El. Commissioner-----

Commissioner with the note of Dr.Ram Prasad on the possibilities of utilizing the power supply available from the Jog Falls.

2. It seems pretty clear that in whatever way this power is used it must be a very costly business so far as this Government is concerned; necessitating a minimum write off of Rs.1¾ Crores in 5 years, which figure may easily be exceeded.This means that Government will need to subsidise the use of this power, possible only in a small area of the Province,to the extent of between Rs.35 to Rs.40 lakhs annually for 5 years.This certainly seems a very heavy subsidy for providing power 2 or 3 years before it could be given from the Kalinadi.

3. This loss to Government is likely to be still further enhanced if the rate proposed to be charged does not prove attractive as seems likely.

4. It is hardly possible to advise on this matter which is one which only Government can decide possibly for political reasons-- for any other considerations the proposal to utilize the Jog Falls Power would be ruled right out as hopelessly uneconomical.

H.Ms.may see and discuss.

Id.R.H.H(ammett),
3/9/47

Id.B.G.K(her),
Id.P.K.S.

Id.M.D.D.G(ilder),
6/9/47

(Pl. see H.P.M's minute on page 162).

H.M.,Ind.& B.C.D.,
H.M.,L.S.G.,
H.M.,For.& Agr.,
H.M.,Labour,
H.M.,Finance,
H.M.,L & C.S.D.,
H.M.,P.H.& P.W.D.,
H.M.,H & R.D.,
H.M.,Ex.& R.C.D.

~~Xxxxxxxxxxxxxxxxxxxxxxxxxxxx~~ This file has been inadvertantly delayed.The El.Commr. may be asked to expedite the full report on the Kalinadi project which was due at the end of Dec.1947.

Id.M.D.D.G(ilder),
30/1/48

Id.N.P.G(urjar),
30/1/48.

4VPA
4/2/48

LETTER.

No. Elg.52(I)/[redacted]
Electric Grid Office
Foreshore Road,
Bombay 1: 26th/30 Aug.

To,

The Secretary to Government,
Public Works Department,
Bombay.

SUBJECT :- Utilisation of Jog Power in the Southern Area of Bombay Province.

As desired in P.W.D. U.O.R. No. 2004/36 dated 9th June 1948, I submit herewith Third Note on the Utilisation of Jog Power in the Southern area of Bombay Province.

Sd/- P.B.ADVANI

Electrical Commissioner with the Government of Bombay

Encl: 1 Note together with its accompaniments.

ETE/11.9

Copy forwarded with compliments to Honourable Minister P.W.D. Bombay.

M i n u t e s of the Conference held at 1-30 P.M. on Saturday the 22nd May 1948 in the Chambers of the Minister for Law and Labour, Government of Mysore, in connection with power supply to Bombay Presidency from Jog.

Present :- 1. Sri K. T. Bashyam, Minister for Law and Labour, Govt. of Mysore.
2. Sri M. P. Patil, Minister for Agriculture and Forests, Govt. of Bombay.
3. Sri R. R. Diwaker, Member of the Constituent Assembly, Bombay Province.
4. Dr. Tendulkar, Managing Director, Deccan Cement Coy.
5. Janab M. Hayath, Chief Electrical Engineer to the Govt. of Mysore.
6. Dr. B. K. Ramprasad, Hydro-Engineer, Bombay Electric Grid.

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(1) Quantity of power that could be made available from Jog Power Station for the Bombay Province:-

The Chief Electrical Engineer to the Government of Mysore brought to the notice of the members that according to the agreement entered into between Bombay and Mysore 5,000 H.P. has been reserved out of the power to be generated at Jog by the Government of Mysore for being made available to the Government of Bombay at the high tension buses at Jog. He stated that this power is available now and is ready to be switched on to the transmission system of Bombay Government at any time from this day.

To a question whether the quantity of power, viz., 5,000 H.P. reserved for Bombay had any bearing on the quantity of power generated at Jog, the Chief Electrical Engineer to the Government of Mysore stated that there was no relation between the quantity of power generated by the Government of Mysore and the quantity of power that had been reserved for Bombay. It is true that the original scheme of the Government of Mysore was only for generation of power to the extent of about 20,000 E.H.P. But the main criterion on which the agreement was drawn up was that certain quantity of water should be allowed to flow over the Falls during the different periods of the season, whether the natural flow of the river justified it or not. Thus the Government of Mysore are required to let down large quantities of water from the storage at Hirebhasgar. The quantity of power of 5,000 H.P. was an arbitrary figure fixed during negotiations, and so long as the Government of Mysore adhered to the schedule of flow of water over the Falls during the season there is no limit to the quantity of power they can generate from the water to be stored by them during the rainy season.

The Minister for Law and Labour, Government of Mysore, stated that we need not worry about the exact terms of the agreement; if more power is required for developing the area just next to the Mysore territory, the Government of Mysore would be willing to extend their helping hand by giving additional power required to the extent possible. To a specific question as to the extent of additional power on which the Government of Bombay could plan, the Minister for Law and Labour, Government of Mysore, stated that from the present station which will have a capacity of 102,000 kW at 75% load factor, power to the extent of 10,000 H.P., subject to the concurrence of his colleagues, could be made available. For a further query from Sri Patil whether this could be enhanced to 10,000 kW, the Minister for Law and Labour, Govt. of Mysore, agreed to consider it favourably, of course subject to approval by his Government.

Sri Patil further enquired whether the Government of Mysore would consider their request for additional power supply over and above the 10,000 H.P. or K.W. now promised from the first st

after they complete their scheme of the second station and what the additional power that could be made available would be. The Minister for Law and Labour, Government of Mysore, enquired as to the extent of power required by Bombay Government, and on learning that their total demand would be about 30,000 kW, he said that the Government of Mysore would give the required priority for the additional power of 20,000 kW required by Bombay Government from the proposed new station at Jog when power from the same is allocated, and he stated that he saw at present no difficulty in meeting a demand to that extent.

(2) Places where power could be made available:

The Chief Electrical Engineer to the Government of Mysore reiterated his position regarding power to the extent of 5,000 H.P. being made available from Jog High Tension buses any day from the date of the Conference. In fact he brought to the notice of the members that he was ready to switch on power to the transmission system of Bombay Government even now. He can only express his opinion with regard to the other spots after he is told as to where power would be required by the Government of Bombay.

To a query whether power to the extent of about 6,000 kW could be made available at the border point between Mysore and Bombay at Harihar, the Chief Electrical Engineer to the Government explained that power to the extent required could be made available if the Government of Mysore approve of the allocation of additional power from the present Jog station over and above the 5,000 H.P. reserved for Bombay Government. But this would required the installation of a step-down station from 110 kV to 66 kV at Bhadravati and construction of one or two circuits of 66 kV between Bhadravati and Harihar. Due to the present difficulties of construction of transmission lines and obtaining equipment for stepping down the voltage it is difficult to guarantee a period by which power could be made available. However, if the two Governments agree on the allocation of 6,000 kW and its being made available at Harihar, the department would do everything possible to make this available as early as practicable. A programme could be drawn up so that the works in Mysore and Bombay would go hand in hand and be ready simultaneously, so that the day the works are completed the power may be switched on and utilised in the Province of Bombay.

Sri Patil brought to the notice of the Minister for Law and Labour, Govt. of Mysore, that the power that is taken off by the Govt. of Bombay at the High Tension buses at Jog Generating Station will have to be utilised only at Hubli and an area surrounding Siralkoppa. Therefore, they are contemplating running a high tension line from Jog to Hubli via Siralkoppa; but they had learnt unofficially that the Government of Mysore would be extending their high tension lines up to Siralkoppa, and if so he would like to know whether the Govt. of Mysore could make the reserved block of power available at the border near Siralkoppa. To this the Chief Electrical Engineer to the Govt. of Mysore explained that he had no scheme, either sanctioned or contemplated, of extending the high tension line (110 kV line) from Jog to Siralkoppa. If at all power supply is to be arranged to Siralkoppa it would be a low tension line which could not meet the demand of the Govt. of Bombay at the border.

(3) Rates for power to be supplied to the Govt. of Bombay.

Sri Patil stated that there was some correspondence between the Governments of Mysore and Bombay as to the rate that is to be charged for the 5,000 H.P. that has been reserved from the Jog Power Station for the Govt. of Bombay. It was stated that the Govt. of Mysore required the Govt. of Bombay to pay a rate of .25 of an anna per unit and the Government of Bombay considered it too high and requested the Govt. of Mysore to reduce the rate to .125 of an anna per unit, and this correspondence ended in 1939 without coming to a final decision in the matter.

The Minister for Law and Labour, Govt. of Mysore stated that the rate to be charged will depend as to where the power supply is to be made available, and this can therefore be considered after a decision is arrived at by the Government of Bombay as to the extent of power and the place where they intend taking the same.

Sri patil stated that to draw up a scheme some indication at which rate power could be obtainable is necessary. It was suggested that for preparation of a scheme a rate of .2 of an anna per unit may be assumed and subsequently any reductio that would be available if the power is obtainable at .15 and .125 of an anna per unit could be calculated. Sri Patil stated that they would go ahead with the preparation of the scheme on the above basis and then write to Govt. of Mysore placing all the facts before them as to the capacity of the scheme, so that the Govt. of Mysore may give the maximum consideration for their request for the reduction of rate. He further stressed that the reduction he is seeking is entirely for making the scheme of supply of power from Jog to the area where it is to be utilised at an economic rate so that there may not be disparity between the rates charged by the Government of Mysore and Government of Bombay in the neighbouring territory for similar purposes. The Minister for Law and Labour, Govt. of Mysore, assured the Bombay delegation that he would view the subject under discussion with utmost consideration and try his best to make power available to the Govt. of Bombay at the lowest rate possible. He brought it to their notice that the cost of the scheme has been very heavy due to abnormal rise in prices and therefore what was contemplated several years ago may not be applicable now. However, he promised to give the best consideration possible to the matter.

At this stage questions were asked by Dr. Tendulkar as to the cost of the transmission lines and the step-down stations as constructed by the Govt. of Mysore. Some figures were furnished by the Chief Electrical Engineer to the Govt. of Mysore, but he stated that he would be glad to furnish any additional information that may be required in this behalf if somebody were to visit his office. Thereafter the Minister for Agriculture and Forests, Govt. of Bombay, directed Dr.Ramprasad to meet the Chief Electrical Engineer to the Govt. of Mysore and obtain all the information that would be required by him in this connection. Dr.Tendulkar promised to meet the Chief Electrical Engineer to the Govt. of Mysore some time later in this behalf.

5.
DDD.
8/6/48.

A copy of the minutes of the conference held at Bangalore to consider the question of power supply from Jog to the Bombay Province has been received from Mr. Hashyam, Minister for Law and Labour of the Mysore Govt. The minutes are correct and are put up for further action.

2. I think it will be possible now to take over the power from the Jog works and supply it to the various parts of Karnatak especially Hubli. In view of the promise of reduction in rate and supply of more power by the Mysore Govt. the Electrical Commissioner may be asked to prepare fresh estimates for supply of power to Hubli, Gadag, Bagalkot, Dandeli and Belgaum towns and surrounding areas. The possibilities of supplying power to Ranebennur area and to the lift irrigation schemes prepared by the Agricultural Department may also be considered.

3. The public of Karnatak is very keen on this problem. Since long it is pressing the Govt. to take up this scheme as early as possible. As the Mysore Govt. has promised to reduce the rate and supply power sufficient for our purpose, consideration of this scheme need not be postponed until the report of Kalinadi project is available. Immediate steps may, therefore, be taken to prepare the schemes as suggested in the minutes and then contact the Mysore Govt. for final settlement about the rate and quality of power to be supplied.

4. The demand for power supply in Karnatak is increasing day by day. The Deccan Cement Factory and a textile mill which will be started at Bagalkot are in need of power. The proposals for starting paper factory, splint factory, alluminium factory are under active consideration of the Govt. Once the scheme is announced sufficient demand will be available.

5. As the scheme is likely to prove a boon to the Karnatak and as the power is available at any moment, the scheme may be given high priority. The officers concerned be instructed to expedite preparation of the

scheme and submit it to Govt. as early as possible.

6. The Mysore Govt. and especially the Minister for Law and Labour may be thanked for showing sympathetic and liberal attitude towards this problem.

Id.- M.P.P. 2-6-48.
H.M.Agri.

H.M., P.W.D. - Id. M.D.D.G. 2-6-48.

P.W.Dept.

El.Br.

Resubmitted.

2. A draft letter to the H.M.for Law and Labour Govt.of Mysore is put up for approval and submission After its issue the papers will be ~~returned~~ referred u.o.to the E.Comm.with reference to paras.2 to 5 of the H.M. ,Agri's minute and with a request to expedite the preparation of the scheme and to submit it to Govt. at the earliest possible date.

THIRD NOTE
ON THE UTILISATION OF JOG POWER
IN THE SOUTHERN AREA OF BOMBAY PROVINCE

In the present consideration of the Jog Power distribution in the South of the Province, it has been assumed that active Government policy of industrialisation will enable development of load in this area to a greater extent than previously provided for in Note No.2. In the latter note, 19,000 kW was taken as the maximum load in ten years. In the present calculations, this is raised to 24,000 kW at the load centres. The recent discussions at Ministerial level in Bangalore showed that Mysore Government will probably be prepared to supply for this purpose about 30,000 kW when they extend the Jog Power Station.

2. As in the previous note, three alternatives have been considered, namely, (1) Distribution of Jog Power by itself, vide Drawing No.Mis.62(1) attached, (2) Distribution of Kalinadi power by itself, vide Drawing No.Mis.62(2) attached, and (3) a combined scheme of Jog-Kalinadi - Jog Power distribution for the first five years and thereafter distribution of Kalinadi power, vide Drawing No.Mis.62(3).

The transmission lines shown in these drawings are the most economical that can be thought of at present, keeping in mind the load centres and the desirability of so co-ordinating the scheme that the Kalinadi is able to take over loads with the least wastage of transmission lines.

3. A separate scheme for taking power from the Mysore Government at Harihar and distributing it in the Byadgi-Haveri area, has also been considered.

4. Calculations made show that under alternative (1), viz. distribution of Jog Power to Hubli and the Haveri areas, will involve a capital cost of 419 lakhs of rupees. Of this sum, about Rs. 370 lakhs will be spent in six years and the balance in the next four years. Selling power at an average rate of 0.65 anna/unit will involve the following deficits at the

different rates payable to the Mysore Government. Average rate of 0.65 anna/unit has been assumed, for it is not likely that we will be able to realise a higher rate for the relatively large amount of power of 24,000 kW which has been taken into account. The scheme may be expected to be self-supporting in the tenth year of operation on the basis of sale of power at 0.65 anna/unit, and its purchase at 0.2 anna/unit, provided we write off the accumulated deficit of Rs. 77 lakhs. The self-supporting stage is expected to be reached in the eighth and seventh year for bulk rates of 0.15 and 0.125 anna/unit respectively payable to the Mysore Government.

Total deficits in lakhs of Rs.in ten years.	Rate payable per unit to the Mysore Government
77	0.2 anna/unit
40	0.15 -do-
23	0.125 -do-

5. Alternative (2) - Distribution of Kalinadi power by itself in the Hubli and Haveri areas - The cost of the scheme (36,000 kW effective) may be of the order of 595 lakhs of rupees spread over some 7 to 8 years. This cost is based on the estimates given on page 8 of the Note No.2; actual cost owing to rise in prices is likely to be higher. Assuming that a load of some 24,000 kW can be built up in about five years from the commencement and power sold at the average rate of 0.65 anna/unit, the scheme is expected to be an economic proposition. The above estimate of costs and remarks are subject to reconsideration on receipt of the Consulting Engineers' survey report.

6. Alternative (3) - Jog - Kalinadi combination - Assuming that Jog power will be supplied for the first five years and thereafter loads will be taken over by Kalinadi, the total capital cost is estimated at 714 lakhs of rupees spread over some 10 years. The actual cost of the Civil Engineering works connected with Kalinadi may increase this total cost to

some extent. Assuming again the sale of power of a total of 24,000 kW made up of 19,000 kW having been built up by Jog in the first five years, and 5000 kW being added in the Kalinadi's first five years, the accumulated deficits over the total 10 years period at different rates payable to Mysore Government prior to change over to Kalinadi are given below :-

Deficits in lakhs of Rs.	Rate payable per unit to Mysore Government
132	0.2 anna/unit
116	0.15 -do-
108	0.125 -do-

On the basis of sale of power at 0.65 anna/unit, the scheme will not be self-supporting even in the 10th year.

Comparing the combined Jog-Kalinadi proposals with Kalinadi scheme by itself, the extra capital cost involved is of the order of Rs. 119 lakhs. Allowing for salvage value of that part of the line, which may be dismantled when Kalinadi is commissioned, the net extra cost to be written off will be of the order of Rs. 102 lakhs. This sum will be in addition to the recurring deficits shown above. Consequently, if power is available from Mysore at 0.2 anna/unit, the total write-off to hasten the supply of power by about 5 years will be approximately Rs. 234/- lakhs; if power is available at 0.15 anna/unit, it will be Rs. 218 lakhs and at 0.125 anna/unit, it will be Rs. 210 lakhs. It will be noted that in the second note, the total deficits to be written off on the combined scheme was estimated at Rs. 174 lakhs. The reason of the present estimate of write-off being higher is that the cost of works is higher and for the industries which will absorb the larger output, the average sale rate is expected to be 0.65 anna/unit instead of 0.83 anna/unit.

7. If under the combined Jog-Kalinadi scheme for the first five years when only Jog is in commission, it is possible to realise 0.75 anna/unit and thereafter 0.65 anna/unit when Kalinadi comes into operation, the deficits will be of the following order. The scheme will not be self-supporting even in the tenth year.

Deficits in lakhs of Rs.	The rate payable per unit to Mysore Govt. prior to change-over to Kalinadi in the 6th year.
107	0.2 anna/unit.
90	0.15 -do-
82	0.125 -do-

The total sum to be written off on basis of 0.75 anna/unit during the first 5 years of service, in order to hasten the supply of power in this area by about 5 years will be as under :-

Deficits in lakhs of Rs.	The rate payable per unit to Mysore Government
209	0.2 anna/unit.
192	0.15 -do-
184	0.125 -do-

Note:- The enclosure hereto gives the rates which will need to be charged to different classes of load in order to make up an average of 0.75 anna/unit for the first 19,000 kW and 0.65 anna/unit for the whole 24,000 kW when Kalinadi comes into operation.
If whole of 24,000 kW were sold at an average of 0.75 anna/unit, the scheme may be self-supporting in the tenth year and the write-off may be about 20% less than shown above.

8. Supply of power to Bagalkot by extending the transmission line from Hubli has been considered and not adopted in the estimates. The distance involved is very long and apart from the technical difficulties in transmitting Jog power so far, the capital cost will be out of all proportion to the revenue which can be realised.

9. It will be noted that for the sale of power in this area, a uniform average rate of 0.65 anna/unit has been adopted for the three alternatives in paras 4, 5 and 6. Subject to the concluding remarks in para 5, it will be noted that the best proposal appears to be Kalinadi by itself, provided demand for about 24,000 kW can be found within 5 years of its inception. It is to be noted that the Kalinadi, fully developed, can provide an enormous amount of power which is at present estimated at 350,000 kW continuous or some 700,000 kW at 50 per cent load factor. As the load develop in this area, Kalinadi will be extended more and more and obviously its cost of generation will be reduced and it will be possible to sell power at a lower average rate than 0.65 anna/unit.

Marginal power is, however, not likely to be available under about 8 to 10 years from now, whereas Jog power can be made available within the time that our own transmission system can be constructed, viz. 4 to 5 years.

10. A scheme for the distribution of Jog power in the Haveri area, power being taken from Mysore Government at Harihar, the load assumed being @ 3000 kW has also been considered, vide drawing No.Mis.(4). This covers both the irrigation pumping as well as the increased industrial load promised by the local industrialists. It will be remembered that in the second note on Jog, we had allowed for 1800 kW load only. The estimated cost of this scheme is about Rs. 53 lakhs. Assuming that Mysore Government will let us have power at Harihar at 0.3 anna/unit instead of at 0.35 anna/unit adopted in the second note and assuming that we can sell power in this area at an average rate of 1.2 anna/unit, the accumulated deficit in ten years of operation is estimated at 12 lakhs of rupees. At 1.2 anna/unit in the tenth year, provided we write off 3 lakhs of rupees, the scheme may be expected to be self-supporting.

11. Orders of Government are requested for further action to be taken.

Sd/- P.B.Advani
Electrical Commissioner
with the Government of Bombay.

Enclosures: Four drawings &
one Rates Statement
as above.

26/30th August 1948.

ARK.9.9.48.

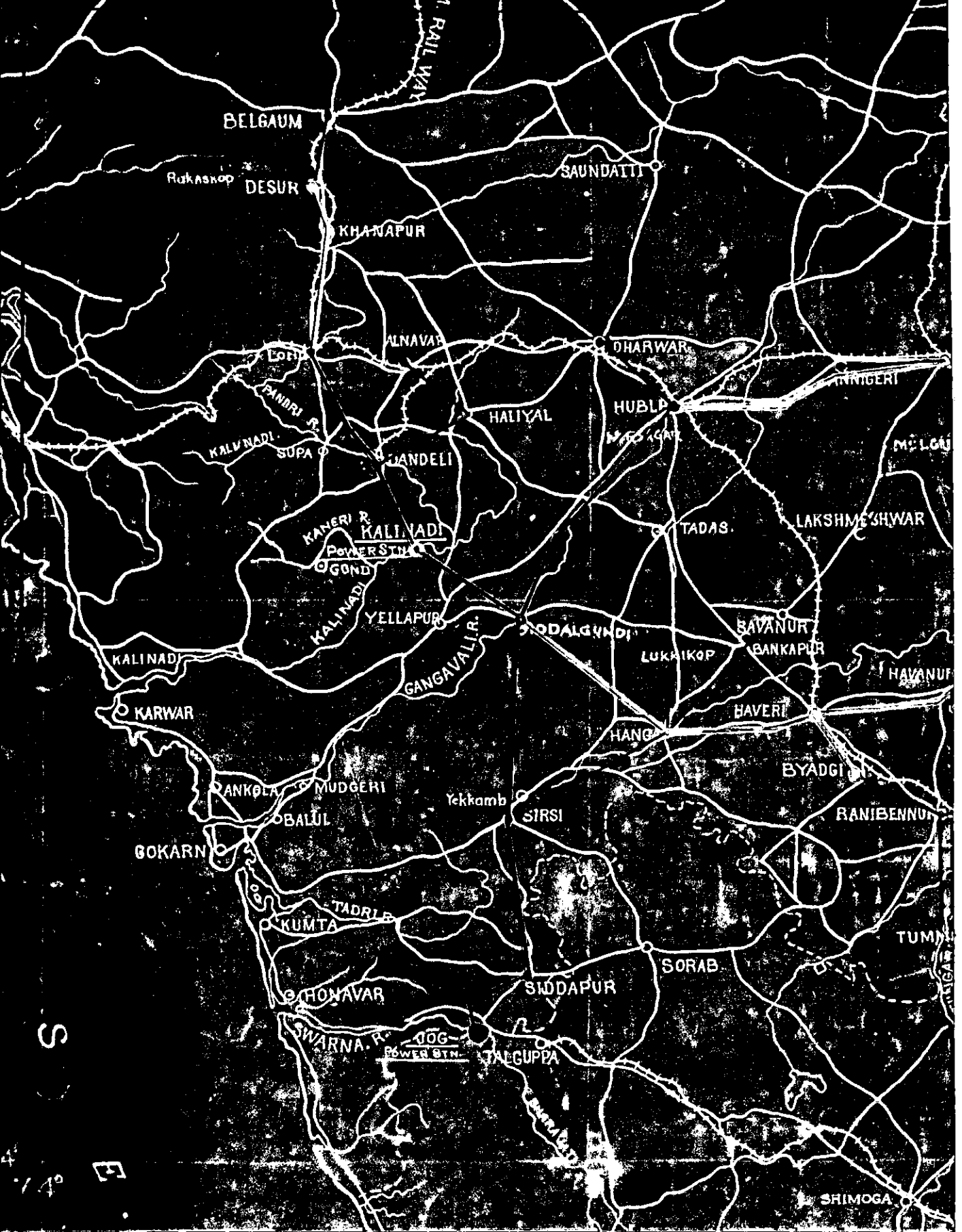
TABLE SHOWING THE APPROXIMATE RATES WHICH WILL APPLY TO DIFFERENT TYPES OF CONSUMERS TO REALISE THE RESPECTIVE AVERAGE RATES.

Sr. No.	Type of Consumer	Voltage of supply.	NOTE II Hubli Area Haveri Av.rate 0.86 anna/unit.	Av.ra 1.35 un	POWER SUPPLY NOTE III Present calculations. Hubli & Haveri areas Av.0.75, 1st 5 years.	Av.0.65 after 10 years.	Harihar supply. Haveri area from Harihar 1.20 anna/unit.
1	2	3	4		6	7	8
1.	Licensee *	11 kV	1.00	1.6	0.9	0.8	1.25
2.	Big mills & workshops.	11 kV	0.90	1.00	0.75	0.65	1.00
3.	Pulp and paper mills	11 kV	0.90	-	0.75	0.65	-
4.	Water supply	11 kV	0.80	1.25	0.75	0.65	1.25
5.	Railway traction.	11 kV		-	0.60	0.50	-
6.	Large scale Irrigatic (low L.F.)	3.3 kV	0.90	1.50	0.90	0.80	1.25
7.	Gins and Presses & Miscellaneous.	400 V	2.25	2.50	2.25	2.00	2.25
8.	Small industries	400 V	2.25	2.50	2.00	1.75	2.00
9.	Small lift irrigation	400 V	2.25	2.50	2.25	2.00	2.25

* This rate should enable the licensee to sell for light and fans at about 6 annas/unit.

-do- -do- -do- 6 annas/unit.

ARK.9.9.48



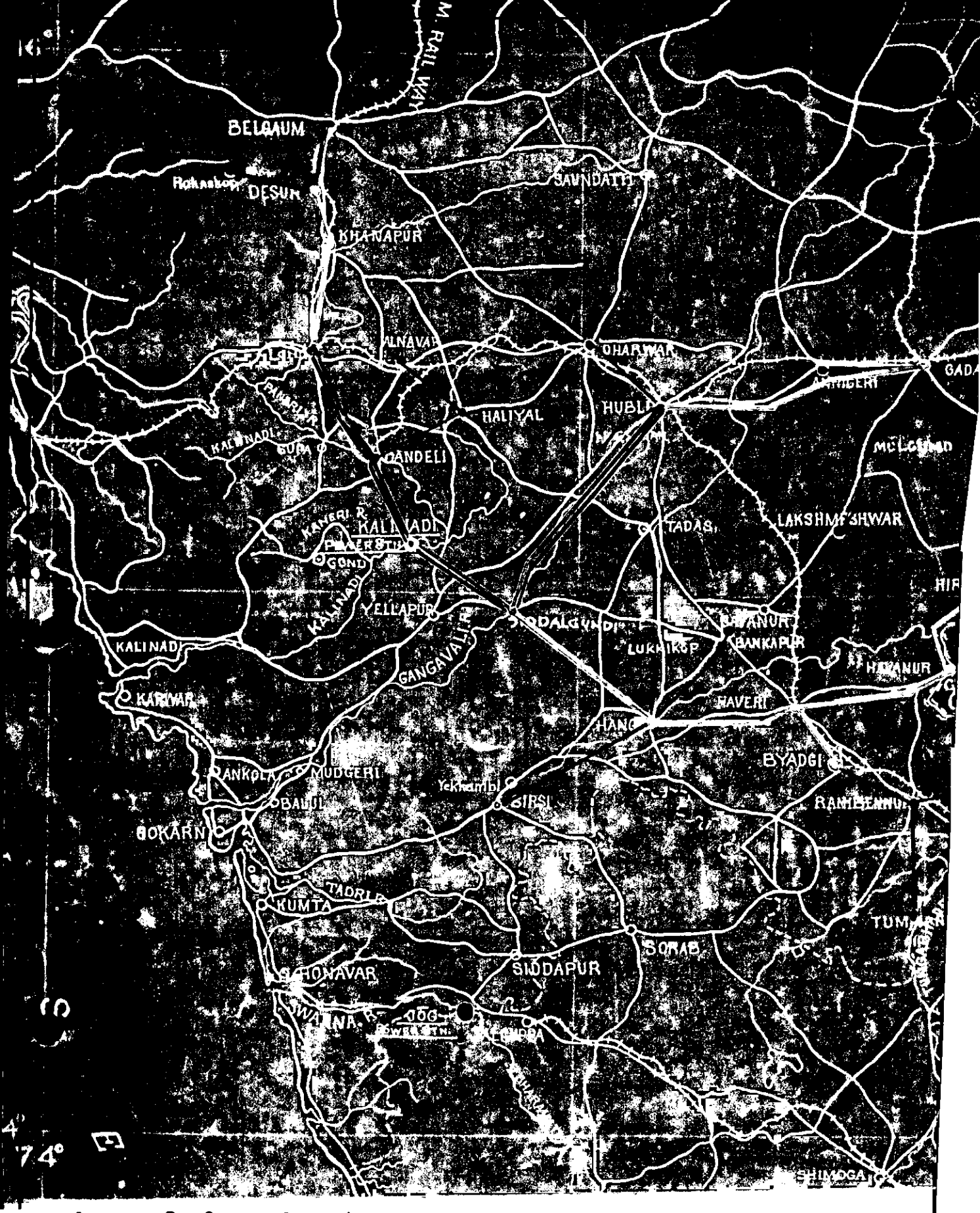
SKETCH-1. SUPPLY FROM JOG.

—— 110 KV LINES.

33 KV LINES.

—— 11 KV LINES.

GOVT. OF BOMBAY - E	
POWER SUPPLY TO KA	
DRAWN BY- R. Joseph	CHE
DATE - 29-9-48.	SCA
DRAWING No. 77 MI	



SKETCH - 2. SUPPLY FROM KALINADI.

66 KV LINES

33 KV LINES

11 KV LINES.

GOVT. OF BOMBAY – ELGR	
POWER SUPPLY TO KAR	
DRAWN BY – R.J....	CH
DATE – 29-9-48.	SC
DRAWING No. MIS.	

SKETCH - 3. SUPPLY FROM JOG - KALINADI.

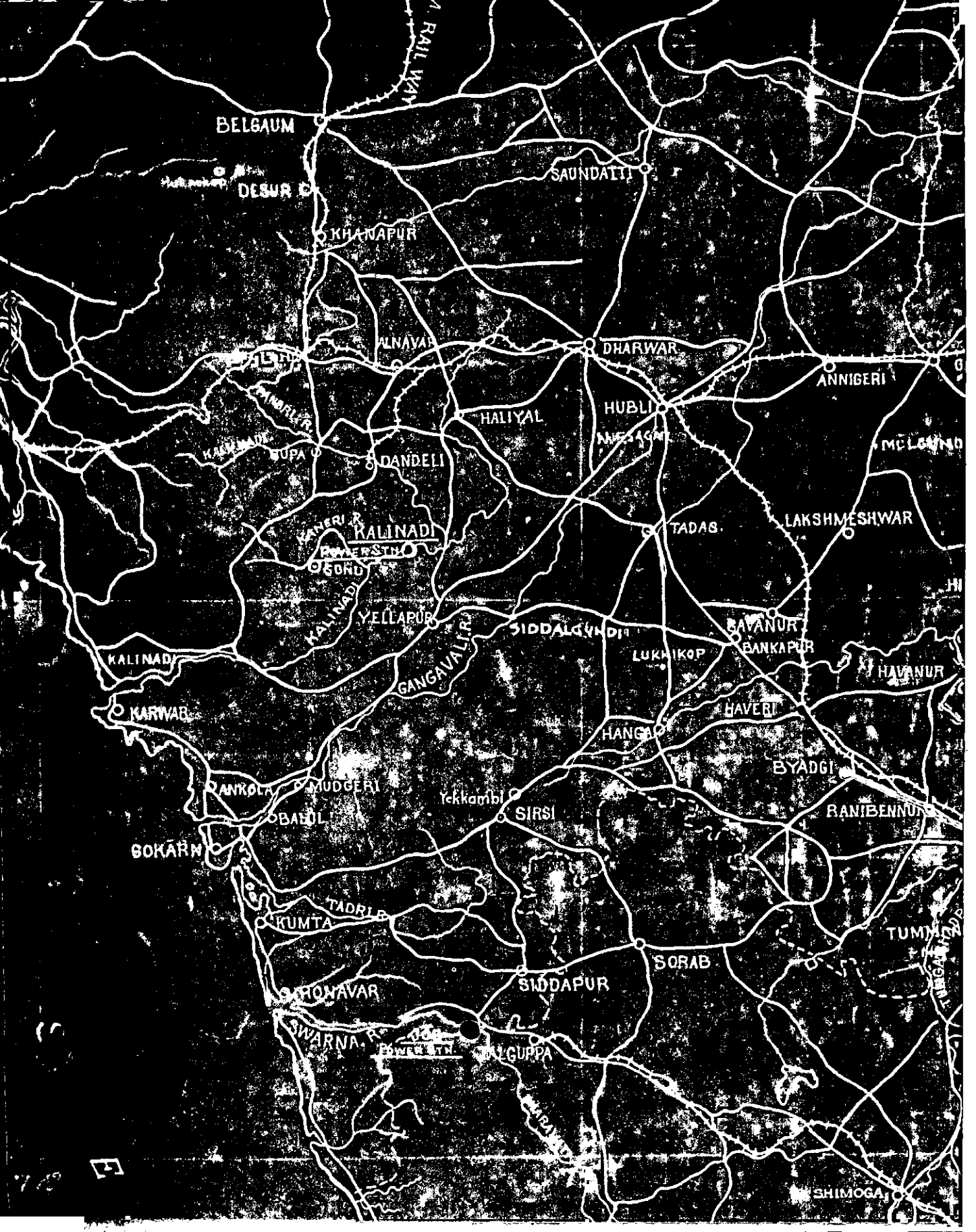
——— 110 K V LINES.

33 K V LINES.

——— 11 K V LINES.

-x-x-x- 110 K V LINES (TO BE DISMANTLED)

GOVT. OF BOMBAY - E	
POWER SUPPLY TO KA	
DRAWN BY - R. Joshi.	CH
DATE - 29-9-48.	SC
DRAWING No. M	



SKETCH -4. SUPPLY FROM HARIHAR.

33 KV LINES.

11 KV LINES.

GOVT. OF BOMBAY - ELC	
POWER SUPPLY TO KA	
DRAWN BY - R. Joseph	CH
DATE - 29-9-48	SC
DRG. No. MIS	

Statement showing rates, etc., under the three alternative schemes regarding the supply of Jog power.

Scheme	Rate payable per unit to the Mysore Government.	Average rate per unit of which power will be sold	Total deficit in 10 years.	The year in which the Scheme is expected to be self supporting.	REMARKS
1	2	3	4	5	6
Alternative (1), viz., supply of Jog power by itself (Capital cost Rs.419 lakhs spread over 10 years).	(a) 0.2 anna	0.65 anna	Rs.77 lakhs	10th year*	*Provided the deficit shown in col.4 is written off.
	(b) 0.15 anna	0.65 anna	Rs.40 lakhs	8th year*	
	(c) 0.125 anna	0.65 anna	Rs.23 lakhs	7th year*	
Alternative (2), viz. supply from Kalinadi Project (Capital cost Rs.595 lakhs spread over 7 to 8 years).		0.65 anna			On the assumption that a load of some 24000 kW. can be built up in about 5 years from the commencement and power sold at the average rate of 0.65 anna/unit the scheme is expected to be an economic proposition / The estimate and the above remarks are subject to reconsideration on receipt of the Consulting Engineer's survey report /
Alternative (3), viz., Jog-Kalinadi combination (Capital cost Rs.714 lakhs spread over 10 years).	(a) 0.2 anna	0.65 anna	[illegible]	A*	*On the basis of sale of power at 0.65 anna/unit this scheme will not be self-supporting even in 10th year.
	(b) 0.15 anna	0.65 anna	Rs.116 lakhs		
	(c) 0.125 anna	0.65 anna	Rs.108 lakhs		
	(d) 0.2 anna	0.75 anna for the first five years when only Jog is in a	Rs.107 lakhs	B	@The scheme will not be self supporting even in the 10th year.
	(e) 0.15 anna		Rs.90 lakhs		
	(f) 0.125 anna		Rs.82 lakhs		

	commission and 0.65 anna thereafter.

Note:- Comparing alternative (3) with alternative (2) the extra capital cost involved is of the order of Rs.119 lakhs. Allowing for salvage values of that part of the line which may be dismantled when Kalinadi is commissioned the net extra cost to be written off will be of the order of Rs.102 lakhs. This deficit will be <u>in addition</u> to the recurring deficits shown above in alternative (3. This means that the deficits mention at 'A' and 'B' above will be respectively as follows:-

'A'	'B'
Rs.234 lakhs	Rs.209 lakhs
Rs.218 lakhs	Rs.192 lakhs
Rs.210 lakhs.	Rs.184 lakhs.

VA/21/9/48.

El.Bch. Public Works Deptt.

Submitted with reference to the minute of the H.M., Agri., dated the 2-6-48, agreed to by the H.M.,P.W.D.

2. In accordance with the instructions given in the above minute the El.Commr.was requested to prepare fresh estimates for the supply of Jog power to Hubli, Gadag, Bagalkot, Dandeli and Belgaum towns and the surrounding areas and to consider the possibilities of supplying that power to the Ranebennur area and to the lift irrign. schemes on the river Tungabhadra prepared by the A.& R.D.Deptt.

3. With reference to the above instructions the El. Commr.has now submitted a note on the utilisation of Jog power in the Hubli & Haveri areas and requests orders of Govt.for further action to be taken.

4. In reconsidering the question the El.Commr.has adopted the following three alternatives previously considered:-

(1) Distribution of Jog power by itself.

(2) Distribution of Kalinadi power by itself.

(3) Combined scheme of Jog-Kalinadi i.e. Jog power distribution for the first five years and thereafter distribution of Kalinadi power.

He has also submitted a separate scheme for the distribution of Jog power in Haveri area, power being taken from Mysore Govt.at Harihar. regd. the supply of Jog power to Hubli & Haveri areas under

5. A statement showing the main details of the three alternative schemes is prepared and put up within. The El. Commr.observes that the best proposal appears to be alternative (2), viz. Distribution of Kalinadi power by itself provided demand for about 24,000 kW can be found within five years of its inception. He further observes that Kalinadi, fully develpped, can provide an enormous amount of power which is at present estimated at 3,50,000 kW continuous or some 700,000 kW at 50 per cent load factors

and....

and that as load develops it willbe possible to sell power at a lower average rate than 0.65 anna/unit. The Kalinadi power is however not likely to be available under about 8 to 10 years from now whereas Jog power can be made available within the time that our own transmission system can be constructed viz. 4 to 5 years.

6. The separate scheme for the distribution of Jog power in the Haveri area off Harihar which covers both the irrign. pumping as well as increased industrialists load is estimated to cost about Rs.53 lakhs and is expected to be self supporting in the 10th year at an average selling rate of 1.2 anna/unit on the assumption that the Mysore Govt.will give power at Harihar at 0.3 anna/unit and provided the accumulated deficit in 10 years of operation is estimated at Rs.12 lakhs as written off

7. The Rl.Commr.has also considered the supply of power to Bagalkot by extending the transmission line from Hubli but has not adopted in the present estimates as the capital cost will be out of all proportion to the revenue which can be realised as the distance involved ~~is very long~~ apart from the ~~xxxxx~~ technical difficulties in transmitting the power.

8. There is a keen and persistent demand from the people of Karnatak for the utilisation of Jog power in advance of that from the Kalinadi. Attention in this connection is invited to the speech of the H.M.,P.W.D., on the resolution of Mr.M.G.Gopi, M.L.C.on the 5th March 1948 regarding the utilisation of Jog power in Kanara Dist. The utilisation of Jog power in advance of the Kalinadi scheme - alternative No.(3) - involves the write off of deficits varying from Rs.184 lakhs to 209 lakhs depending on the rate, at which power will be available from the Govt.of Mysore, the

rate.....

rate at which it can be sold and the availability of load.

9. Govt.orders are solicited what instructions may be issued to the El.Commr.

3
MKP.
21/9/18.

'Thro' D.E.(I)

Id. A.G.M.
23/9/48

Secy (I) From a financial point of view, alternative 2 would appear to be the best but the time taken would be 8 to 10 years which would be too long a wait. For these reasons I would suggest that the alternative 1 be taken in hand. However this is a matter which Govt. will have to decide finally.

Id. N.P.G.
23/9/48

Supply of Jog Power to Karnatak.

Please see the attached statement.

Three schemes have been discussed :-

(1) To take power from Jog only: The quantity agreed at present is 10,000 kW but may be later increased to 30,000 kW (or more if possible). The price at present proposed is 0.25 anna per unit, but may be lowered for the 10000 kW from the present installation. The extent of lowering is not stated. For further power, Mysore Minister has pointed out that cost may be higher from machinery installed later at higher prices. The time taken would be 4 to 5 years.

(2) To take power from Kalinadi only.

Quantity - 350,000 kW.
Price - not quite certain, will be reported next month: but believed to be economic.
Time - 8 to 10 years.

(3) To take power from Jog now and Kalinadi later.

Quantity - 350,000 kW.
Price - will vary.
Deficit to be written off - anything between 184 and 234 lakhs - say 2 crores.

Alternative (3) (Jog plus Kalinadi) means a write off of two crores for supplying electricity 4-5 years earlier. The present demand is only 5,000 kW.

It is for decision -

(1) whether Government would like to wait for Mr.Mirchandani's and Mr.Advani's full report and then publish all reports and allow Karnatak to choose between the alternatives (1) and (2) or whether Government should decide at this stage;

(2) whether negotiations may be started with the Government of Mysore for delivery of supply at Harihar and if the price is suitable a start may be made to undertake supply to Haveri (estimated cost 53 lakhs, loss in first 10 years 12 lakhs, self supporting after 10 years).

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Statement showing rates, etc., under the three alternative schemes of Jog power to Hubli and Haveri areas.

Scheme.	Rate payable per unit to the Mysore Government.	Average rate per unit at which power will be sold	Total deficit in 10 years.	The year in which the Scheme is expected to be self-supporting.	REMARKS
1	2	3	4	5	6
Alternative (1), viz., supply of Jog Power by itself (Capital cost Rs.419 lakhs spread over 10 years).	(a) 0.2 anna (b) 0.15 anna (c) 0.125 anna	0.65 anna 0.65 anna 0.65 anna	Rs.77 lakhs Rs.40 lakhs Rs.23 lakhs	10th year* 8th year* 7th year*	*Provided the deficit shown in Col. 4 is written off.
Alternative (2), viz. supply from Kalinadi Project (Capital cost Rs.595 lakhs spread over 7 to 8 years).		0.65 anna	-	-	On the assumption that a load of some 24000 kW. can be built up in about 5 years from the commencement and power sold at the average rate of 0.65 anna/unit the scheme is expected to be an economic proposition /The estimate and the above remarks are subject to reconsideration on receipt of the Consulting Engineers' survey report/
Alternative (3), viz., Jog-Kalinadi combination (Capital cost Rs.714 lakhs spread over 10 years.)	(a) 0.2 anna (b) 0.15 anna (c) 0.125 anna (d) 0.2 anna) (e) 0.15 anna) (f) 0.125 anna)	0.65 anna 0.65 anna 0.65 anna 0.75 anna for the first five years when only Jog is in commission and 0.65 anna thereafter.	Rs.132 lakhs) Rs.116 lakhs) Rs.108 lakhs) Rs. 90 lakhs) Rs. 82 lakhs) Rs.107 lakhs.	A* B@	*On the basis of sale of power at 0.65 anna/unit this scheme will not be self-supporting even in 10th year. @The scheme will not be self supporting even in the 10th year.

Note:- Comparing alternative (3) with alternative (2) the extra capital cost involved is of the order of Rs.119 lakhs. Allowing for salvage values of that part of the line which may be dismantled when Kalinadi is commissioned the net extra cost to be written off will be of the order of Rs.102 lakhs. This deficit will be in addition to the recurring deficits shown above in alternative (3). This means that the deficits mentioned at 'A' and 'B' above will be respectively as follows :-

'A'	'B'
Rs.234 lakhs	Rs.209 lakhs.
Rs.218 lakhs	Rs.192 lakhs
Rs.210 lakhs	Rs.184 lakhs.

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